J/46 Owner Guide

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Attachments & Enclosures:

- *Important Hall Spars Carbon Mast Information*
- *TPI Compostites Limited Warranty*

Introduction

WELCOME ABOARD and welcome to the J/Boats family of owners. Your boat is designed and engineered to be the strongest, best performing, easiest-to-use, and most comfortable sailing boat of its type.

Sailing involves risk, most of which can be minimized with advance planning and proper seamanship. The J/46 owner should become proficient in all aspects of handling the vessel under sail and power, and be well versed with emergency procedures before undertaking any offshore passage. The owner is further responsible for any required state registration or federal documentation, accident reporting, outfitting the vessel with proper safety equipment, and the safe operation of the vessel. J/Boats is happy to refer the owner to Boating Safety Courses or other seminars available.

This guide is prepared to help owners understand proper rigging, tuning, and operation of the J/46. Please be sure to complete the enclosed warranty card and mail to TPI Composites, Inc.

This guide is furnished for your benefit, but shall in no way be construed as any sort of warranty or contract, express or implied, creating any obligation on the part of J Boats, Inc., with respect to any fact or facts or any advice or opinions contained herein. The sole and exclusive warranty of the product is the TPI Composites, Inc. Warranty described in the appendix hereto and on the Warranty Card furnished with the yacht. J/BOATS, INC. HEREBY DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OF MERCHANTABILITY.

Specifications

LOA	46.0'
LWL	40.5'
Beam	13.8'
Draft	4.75', 6.2' (std.), or 7.5'
Ballast	9,500 lb. (std.), 8,900 lb. Deep
Ballast Type	Cast lead strengthened with antimony
Displacement (std boat)	24,400 lbs.
100% Sail Area	1,020 sq ft
I	58.5'
ISP	60.5'
J	16.7'
P	53.5'
E	19.9'
Engine	Yanmar® 76HP Turbo Diesel (4-cylinder)
Fuel Capacity	90 US gallons
Engine Alternator	Balmar 150 amp
Battery Capacity	486 amp hours (add'l 210 amp optional)
Water Capacity	120 US gallons
Interior Cabin Headroom	6.33'
Limit of Positive Stability	130+ degrees
Ice Box Capacity	10 cubic feet in two separate boxes
LPG Capacity	(2)10 lb. Bottles
Hull & Deck Core Material	Baltek® AL-600 CK-57 End-Grained Balsa
Hull & Deck Molding Process	SCRIMP® Resin Infusion
Hull Blister Warranty	10 Years: Owner Transferable
Mast Height Above Water	65.0'

Commissioning Checklist

Pre-Launch

___ Read equipment owner manuals
___ Pre-rig mast and check installation of:

- halyards
- blocks
- electronics
- shrouds
- spreader chafe guards
- lifeline pins

___ Pre-rig boom
___ Bottom painted or touched up
___ Check propeller/strut/zinc
___ De-winterize engine and check status of:

- engine oil/ filter
- coolant level
- transmission fluid level
- water intakes/filter
- fuel lines/filter

___ Check battery charge
___ Align prop vertically & mark shaft
___ Check all hose clamps, tighten as required
___ Close all seacocks

Loose Gear

___ Fenders and lines
___ Dock lines
___ Winch handles
___ Ignition keys
___ Bilge pump handles
___ Mast wedges/Spartite lubed
___ Double-check sling locations and mark

Launch

___ Check for leaks
___ Check seacocks
___ Check shaft seal for leaks

Engine Start

___ Read engine owner's manual
___ Align engine and shaft
___ Start engine
___ Check exhaust for cooling water flow
___ Check oil press., water temp., charging gauges
___ Check transmission- forward/reverse
___ Check shaft seal

Step Mast

___ Remove interior headliner at mast opening
___ Hoist spar and lower into boat
___ Attach furler to stemhead fitting
___ Attach hydraulic cylinder to backstay and plate
___ Attach all shrouds and hand tighten
___ Install wedges/Spartite and mast boot
___ Connect mast junction box wires

Rigging

___ Install boom
___ Lead all halyards to stoppers on cabin top
___ Rig reef lines
___ Install and connect boom vang
___ Rough tune spar per tuning guide

Systems Check

___ Fill water tanks- flush twice to eliminate anti-freeze
___ Check water pressure system, bleed air if necessary
___ Fill and check LPG system
___ Fill fuel tanks
___ Check operation of electrical systems and pumps
___ Check sailing electronics

Trial Sail

___ Raise and lower sails to check for fit
___ Monitor engine performance and check shaft seal
___ Check bilge for leaks
___ Check sailing electronics
___ After sailing, re-caulk main chainplates
___ Mark locations in cockpit to install teak foot braces (shipped loose)

Getting Started With Your J/46

Generally, your dealer or commissioning yard will help you prepare your boat before launching. And in most instances with a boat this size they will undertake the entire commissioning job. They are experts in the field and are capable of completing most commissioning tasks.

Before Proceeding

Before you begin to assemble your new boat you should become familiar with the different sail control systems and associated hardware. All running rigging and loose deck hardware items are shipped from the factory in parts boxes complete with part inventory sheets. To help you properly install these items please refer to the rigging and hardware sections and diagrams in this guide.

The Commissioning Checklist: will help you double check that the J/46 is assembled properly and all systems and rigging are functioning properly. If a boat yard other than an authorized J/Boat dealer is performing the work, review this list with them to establish what needs to be done and by whom.

Topsides: wash off all dirt and grime accumulated from delivery. Use only non-abrasive cleansers on the gelcoat. Then apply a coat of high quality car or boat wax or use a synthetic poly-based coating. Either finish will prolong the life and sheen of the gelcoat.

Bottom: preparation is critical to long-lasting enjoyment. To ensure a professional finish, carefully review the paint manufacturer's recommendations for preparing the bottom and have your dealer to roll it or spray it on. Be sure that there are a minimum of 4 coats of epoxy primer covering the keel and rudder prior to final coating of bottom paint.

Chainplates: are custom built of polished 316 grade stainless steel. Each pair surrounds the 1-1/2" fiberglass main structural bulkhead and is anchored directly to it with staggered bolts. The backstay chainplate is also 316 grade and through bolts directly to a reinforced area of the transom.

Stemhead Fitting: is a custom polished 316 grade stainless fabrication with integrated bow roller and anchor retainer pin. The stem head fitting is designed to withstand all headstay loads, and is attached with bolts directly to the stem of the hull.

Mast Collar: is built of polished 316 grade stainless and incorporates welded rings for halyard and reefing line blocks and a forward halyard bar. The mast boot fits over the flange of this collar to seal the interior.

Toe Rail: is extruded and anodized aluminum 2" in height which is installed along the entire length of the boat and through bolted to the hull/deck joint at six inch intervals. Accommodations for amidships, bow, & stern chocks and cleats are also integrated into this toe-rail.

Stanchions & Pulpits: are designed for proper offshore safety as well as to facilitate access to the boat. Included are two lifeline gates to port and starboard and a stern boarding gate. The bow pulpit is properly braced, houses the bow running lights, and with a mid-height bar across the front end. The stern push-pit is standard with an aft gate and stern running light. This is a convenient place to mount a man overboard module, outboard bracket, etc.. All stanchions are 1" diameter tapered stainless steel and are secured into their custom designed bases with machine set screws.

Lifelines: are SS wire in accordance with ORC safety regulations and are fastened at either end by stainless forks and turnbuckles. Each lifeline is clearly marked from the factory and is intended to fit a specific portion of the lifeline/stanchion system. The installation follows:

- Insert all lifeline gates/stanchions into the sockets provided along the toe-rail. Secure each stanchion in place by tightening the two set screws in each base. We recommend that you dip the screws in blue Loctite or sealant before securing, so they don't work themselves loose over time.

- Install all lifelines without tightening the turnbuckles. Remove the eyes at the ends of the lifelines and thread them through in the stanchions.

- Finish off the job by tightening the turnbuckles, adjusting the lifeline gate pendants for the proper length, and taping off the turnbuckle "split rings" (or cotter pins) for a finished appearance.

Skylight Ventilation Hatches: are made of extruded anodized aluminum frames (polished frames are optional) and scratch-resistant acrylic covers. Each hatch comes equipped with a ventilation position and 180 degree articulation.

Ports and Opening Ports: are of painted aluminum frames with bronze colored acrylic and arrive "ready-to-use". The opening ports are specifically engineered and located to maximize cross-flow ventilation.

DO NOT PERMIT ACETONE OR OTHER HARSH CLEANSERS TO GET ON PORTS, OR HATCHES AS THEY MAY DAMAGE THE FINISH & CLARITY OF SOME DECK HARDWARE.

Dorade Ventilators: The J/46 is equipped with four dorade ventilators which supply air to the forward and main cabins. The forward ventilators (near the mast) are each protected by a stainless deck guard. Flat plates (provided in a ship loose kit) can be screwed down with the dorade guards to close off the outside air supply.

Deckhouse Handrails: Built of 316 grade stainless these replace the traditional teak to facilitate easy of maintenance and ownership.

Winches: Standard winches are all-chrome self-tailing models from Lewmar Marine. The location of the winches facilitate sailing with one or two aboard. Each is geared to match the load requirements of the specific task.

Windlass: The J/46 is equipped with the Lewmar Concept windlass for simple anchoring operation. Please refer to the windlass manual for specific operating instructions.

J/46 Steering System

The steering system is carefully engineered to provide finger-tip control. This is achieved by utilizing Harken rudder bearings and steering system components from Edson. The pedestal is custom fabricated by TPI to incorporate the 5" Ritchie compass, engine throttle, and additional instrumentation.

Wheel: is a 60" Edson "Diamond" series wheel with an Elk hide cover. The wheel is mounted to the pedestal by through-bolting the hub to the stainless hub bracket. When installing, first center the rudder, then install the wheel with the name plate vertical. Then place a mark at the top of the rim or on the vertical spoke as a centerline reference point.

Rudder: is made of unidirectional glass, with two halves bonded together, and a highly reinforced fiberglass shaft which extends to 80% of the depth of the rudder. The rudder is engineered to withstand tremendous shear loads in ocean conditions. It's high aspect shape helps reduce the "torque" tendency of most rudders, thereby reducing helmsman and auto-pilot fatigue.

Rudder Stock Stuffing Box: is located at the top of the fiberglass rudder tube beneath the decks. It is a simple design which prevents water from entering the hull. A stainless sleeve bearing surface surrounds the rudder tube at the point where a rubber seal is forced against it to prevent water from rising up the tube.

Emergency Tiller: is operated by lifting off the access plate (amidships), and placing the base of the tiller over the head of the rudder stock. Then secure a line (any spare line or dock line) to each eye at the end of tiller, and lead outboard through the spinnaker sheet turning blocks, forward to either the mainsheet or primary winches. If you pull the starboard line the boat turns to port. Pulling the port line steers the boat to starboard. Fit the emergency tiller NOW to see how the system works BEFORE you get caught in a situation where you won't have the time!

Sail Control Systems

The J/46 sail control systems are designed for maximum efficiency and ease of handling. Below is a brief description of each system:

Mainsail Controls:

Main Halyard: exits the mast on the port side, runs through a turning block at the mast collar aft to the organizer and then aft to the rope clutch leading into the cockpit halyard/secondary winch.

Main Sheet: is a 2:1 continuous system running to both port and starboard side mainsheet winches. The line is led from one winch through a deck mounted turning block to one block on the traveler car, up to the single boom block, back down to the second block on the traveler car, and out to the other deck block and finally to the other winch. The system is designed to allow extremely easy adjustments of the mainsheet by any size or age person. The self-tailing winch feature also facilitates single-handed sailing and rapid adjustments during sailing maneuvers. Be sure to put a "stopper knot" like a figure-eight at both ends of the sheet.

Traveler: consists of a traveler bar and traveler car mounted in the cockpit. The car is controlled by a 6:1 purchase system led to either side of the cockpit. The traveler control line dead-ends outboard at the base of the end car system, then runs back and forth between the traveler car and end fitting, finishing at the cleat assembly.

Reef Lines: are designed to be fully functional from the cockpit. The mainsail tack reef lines lead from a pad-eye on the side of the mast below the gooseneck, up through the tack cringle in the mainsail, and back down through a cheek block mounted on the opposite side of the mast, down through a mast collar turning block, then aft to a cockpit cabin top winch. The mainsail clew reef lines exit the forward end of the boom, lead aft through the mast collar turning block to the cockpit cabin top winches.

Outhaul: is an 12:1 internal tackle system pre-assembled by Hall Spars and cleated underneath the boom.

Boom Vang: is manufactured by Hall Spars and is equipped with a Harken block and tackle system. The block with the integral cleat should mount to the lower end of the vang. Adjust the support spring by removing the large Allen screws on either side and align in the proper adjustment hole per the Hall instructions.

Backstay: A Sailtec integral hydraulic backstay adjuster is included with the J/46 to enable you to control the upwind shape of the mainsail by bending the mast. A simple hand pump and release valve control the operation of this unit.

Jib Controls

Jib Halyard: exits the mast on the port side, runs through a turning block at the mast collar aft to the organizer, and then leading into the halyard/secondary winch.

Jib Sheet: is attached to the headsail by a bowline knot and led aft to the jib car on the jib track then aft through the foot block to the primary winches. If a large genoa is used, the sheets lead outboard of the shrouds to the aft genoa car, then through the foot block and to the winch.

Jib Blocks & Tracks: are located port and starboard along the cabin sides. Adjustable pin stop jib/genoa lead blocks are supplied for the main track with two snatch blocks provided for use on outboard jib tracks.

Spinnaker Equipment

Spinnaker Halyard: exits the starboard side of the mast and leads through a turning block at the mast collar to an organizer block and then aft to the clutch.

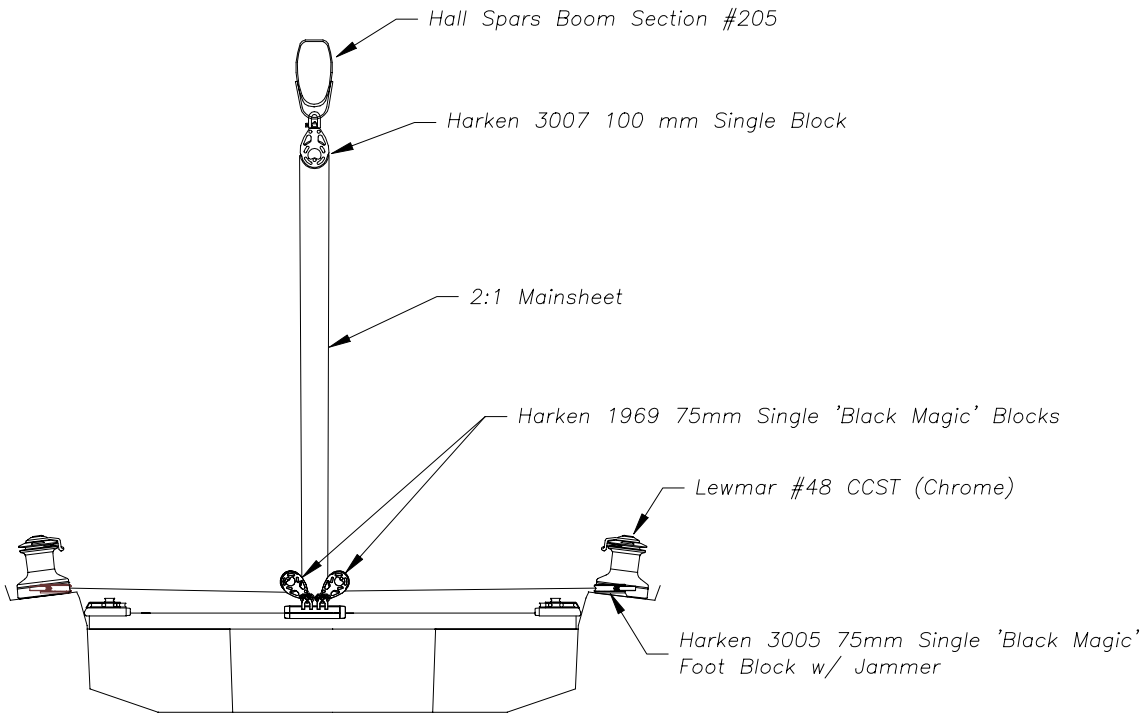
Spinnaker Sheets: lead from the clew of the spinnaker aft outside the lifelines through the spinnaker sheet blocks (just in front of the stern pushpit), forward through the deck cheek blocks, then to either the cabin top or primary winches. When hooking up the asymmetrical spinnaker the windward (or lazy) sheet should be led in front of the headstay.

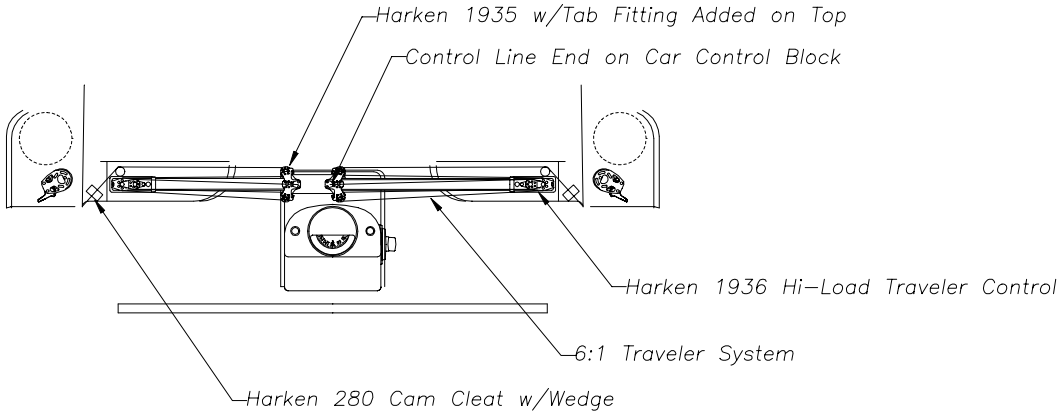
Tack Line: The tack line leads through the Harken 75mm block on the forward-upper hole of the bow-roller and then aft to a rope clutch at the cockpit.

Snuffer Control Loop: Assuming you have ordered a snuffer with your spinnaker, there are two ways of rigging the snuffer control lines. 1) Leave them loose on the foredeck, and once the spinnaker is raised and “unsnuffed” you can pull the slack out of both snuffer lines and secure at the mast base. Snuffing the spinnaker then requires you to go to the foredeck. 2) Run the control lines through two small blocks (shackled on either side of the tack line block) aft along the starboard side to two Harken cleats mounted on the starboard side of the cabin trunk. The upper cleat is intended for the control line that raises the sock, the lower cleat for the line that lowers the sock. The loop is continuous so you must uncleat both for the system to function. There is more friction with this system, but you are able to snuff the spinnaker without leaving the cockpit.

Diagrams, Layouts, & Schematics

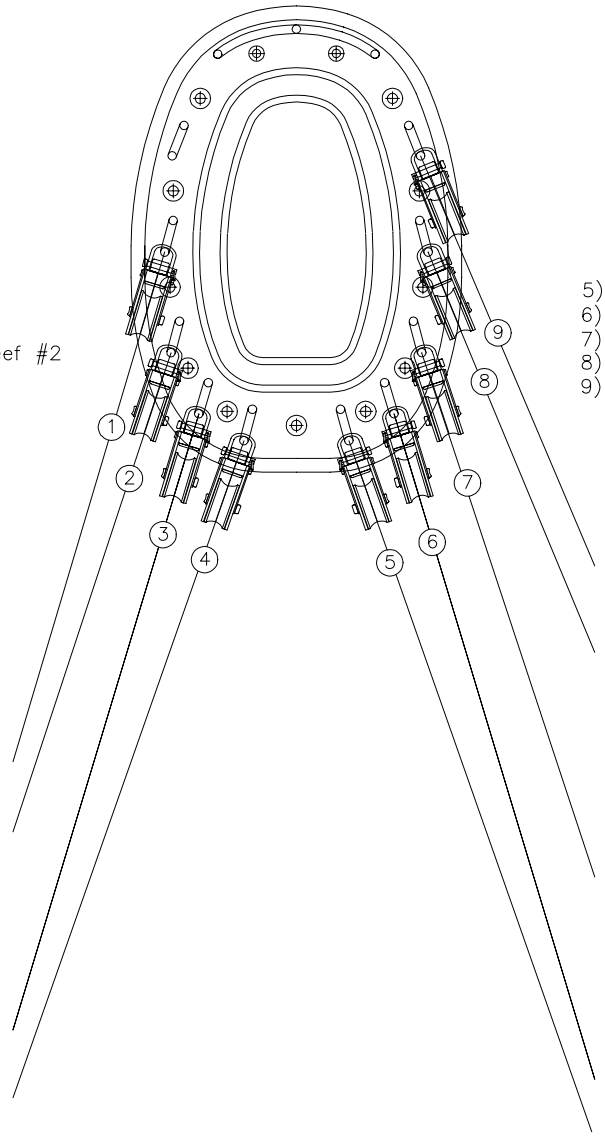
Mainsheet & Traveler Diagram


Hall Spars Boom Section #205
Harken 3007 100 mm Single Block
2:1 Mainsheet
Harken 1969 75mm Single 'Black Magic' Blocks
Lewmar #48 CCST (Chrome)
Harken 3005 75mm Single 'Black Magic' Foot Block w/ Jammer


Harken 1935 w/Tab Fitting Added on Top
Control Line End on Car Control Block
Harken 1936 Hi-Load Traveler Control
6:1 Traveler System
Harken 280 Cam Cleat w/Wedge

Halyard Layout

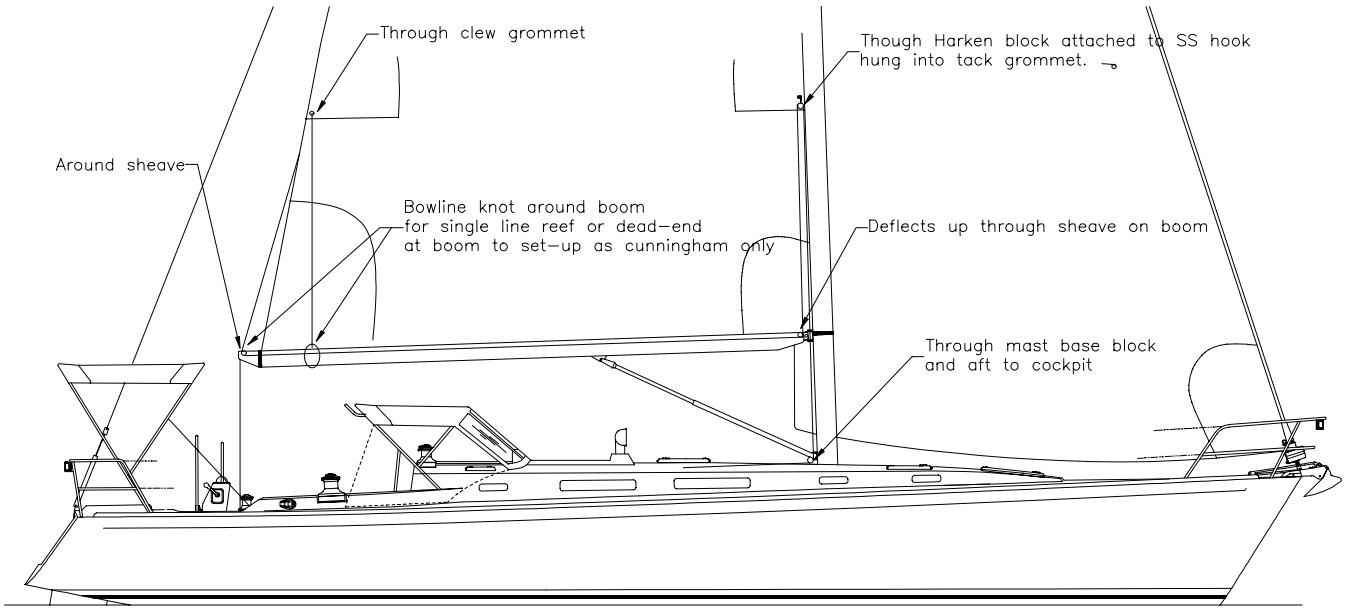
1) Spinnaker Halyard
2) Jib Halyard
3) 2:1 Main Halyard
4) Cunningham/Tack Reef #2



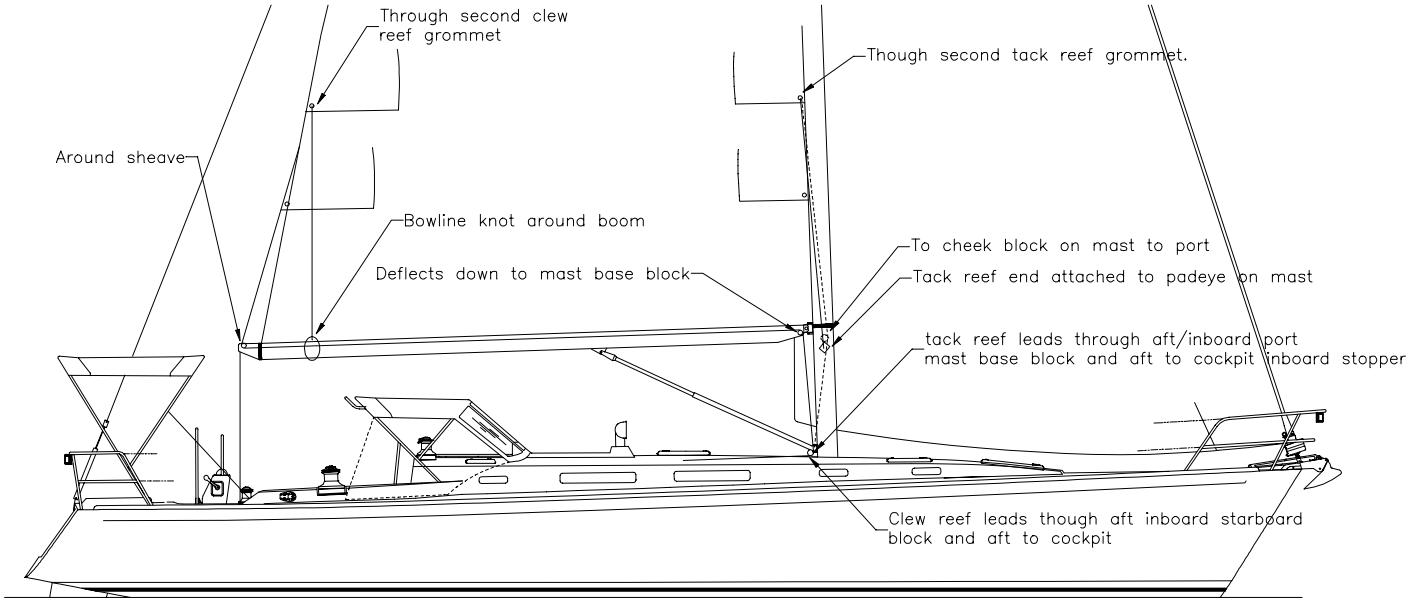
5) Clew Reef #2
6) Continuous Reef
7) Jib Halyard
8) Optional Spinnaker Halyard
9) Optional Inner Forestay Jib Halyard

Reefing System Diagram

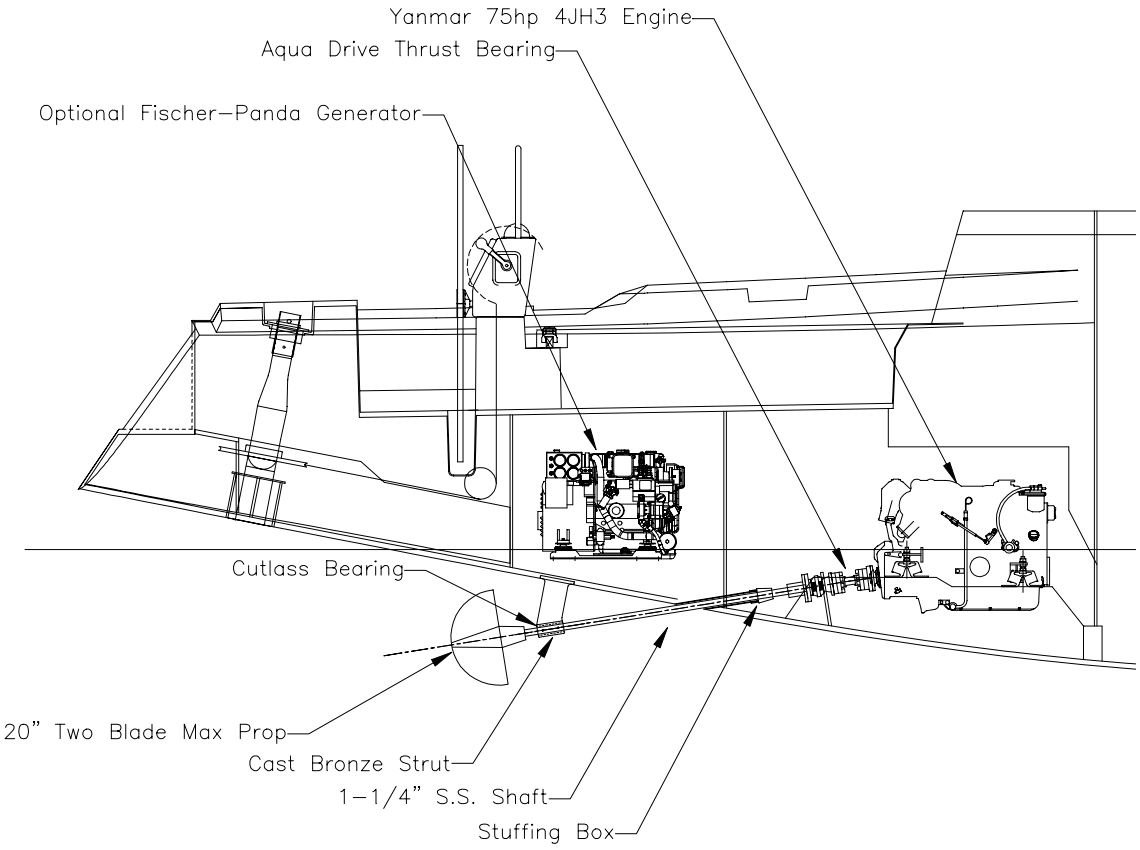
J/46 Single Line Reef/Cunningham System


Through clew grommet
Though Harken block attached to SS hook hung into tack grommet.
Around sheave
Bowline knot around boom for single line reef or dead-end at boom to set-up as cunningham only
Deflects up through sheave on boom
Through mast base block and aft to cockpit

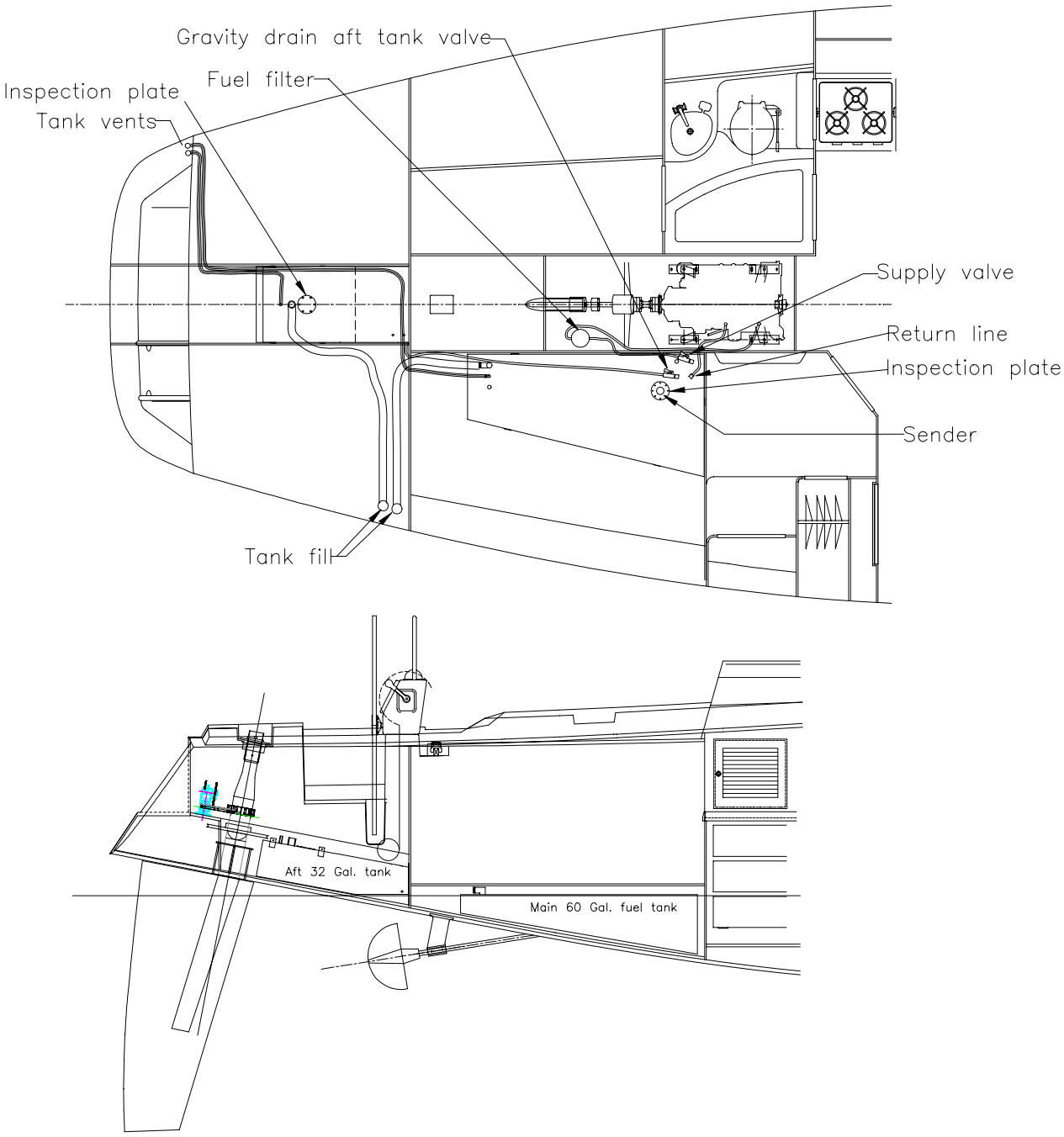
J/46 Second Reef System


Through second clew reef grommet
Though second tack reef grommet.
Around sheave
Bowline knot around boom
To cheek block on mast to port
Deflects down to mast base block
Tack reef end attached to padeye on mast
tack reef leads through aft/inboard port mast base block and aft to cockpit inboard stopper
Clew reef leads though aft inboard starboard block and aft to cockpit

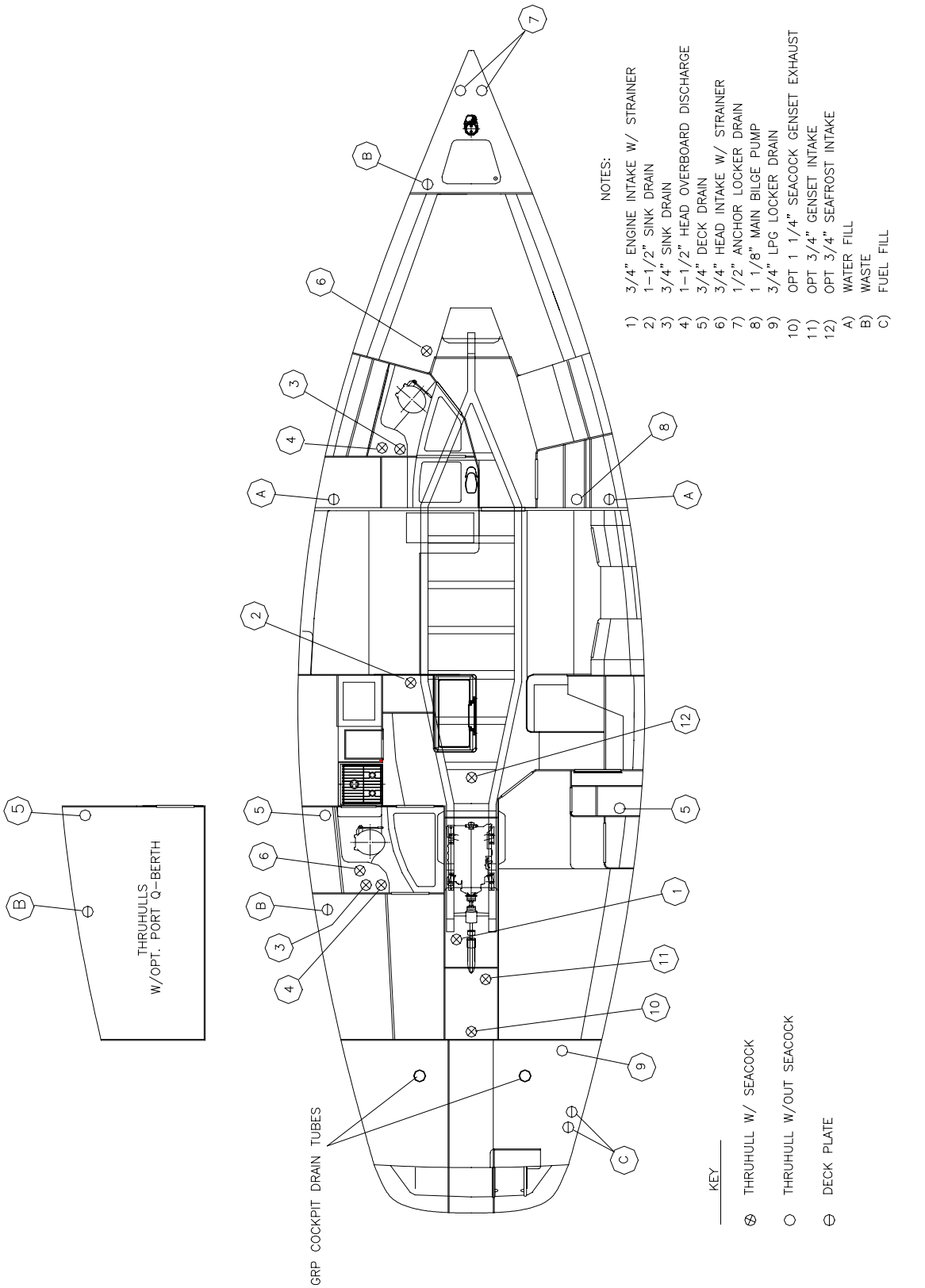
Engine & Optional Generator Layout



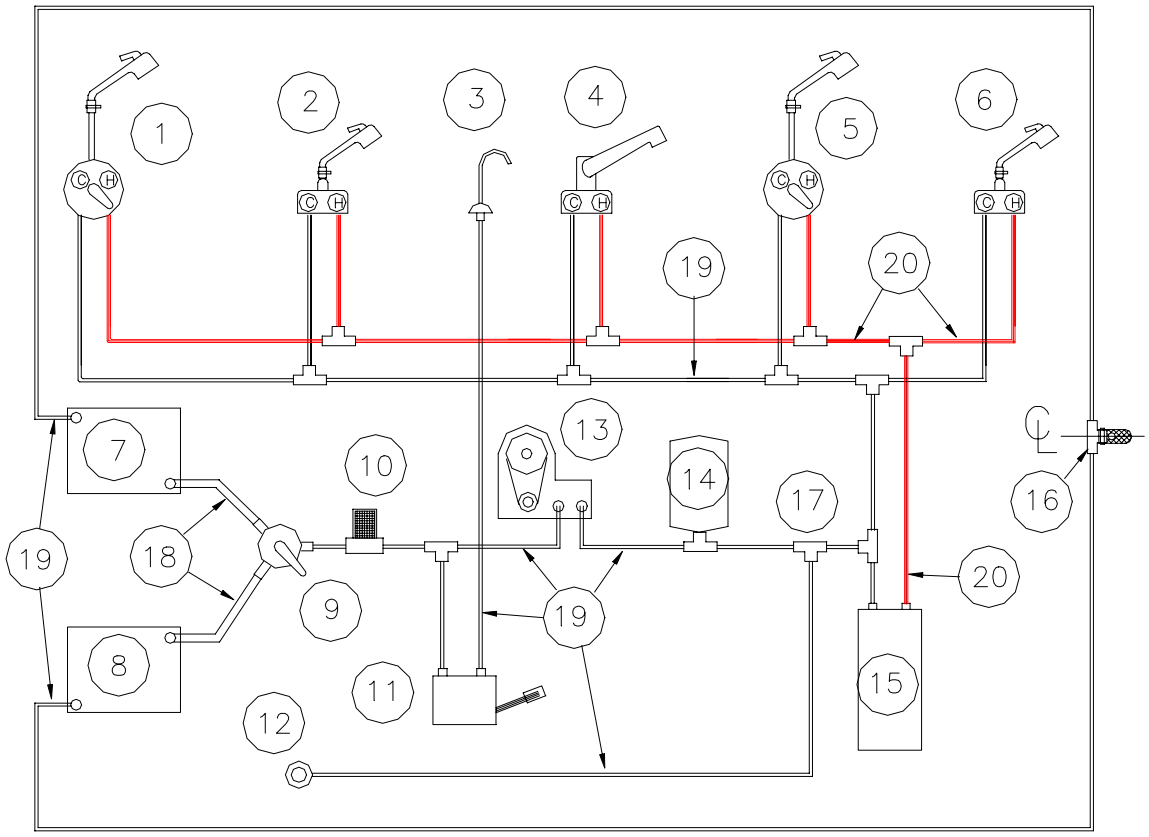
Fuel System Layout



Deck Fill & Thru-Hull Locations

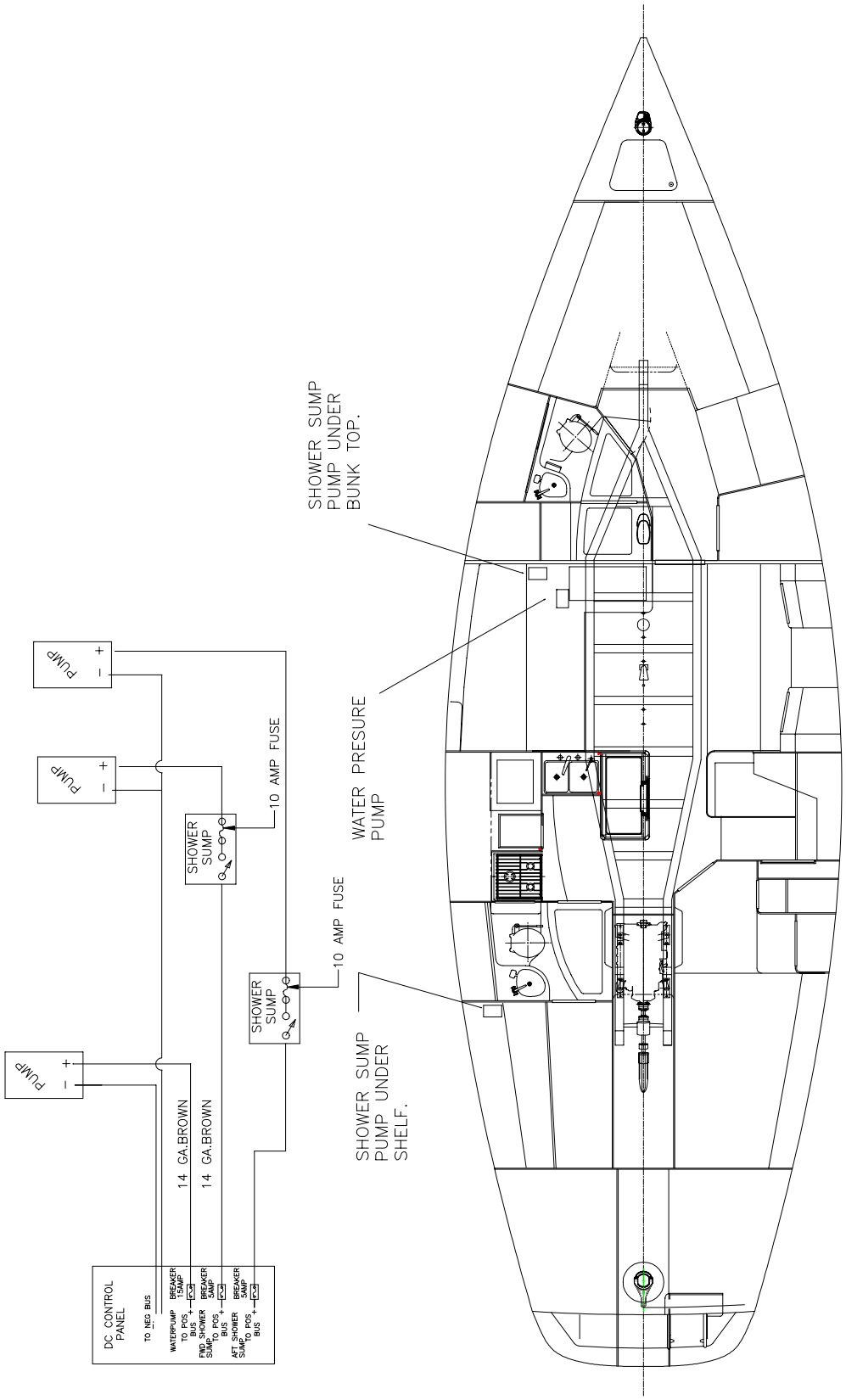

NOTES:
1) 3/4" ENGINE INTAKE W/ STRAINER
2) 1-1/2" SINK DRAIN
3) 3/4" SINK DRAIN
4) 1-1/2" HEAD OVERBOARD DISCHARGE
5) 3/4" DECK DRAIN
6) 3/4" HEAD INTAKE W/ STRAINER
7) 1/2" ANCHOR LOCKER DRAIN
8) 1 1/8" MAIN BILGE PUMP
9) 3/4" LPG LOCKER DRAIN
10) OPT 1 1/4" SEACOCK GENSET EXHAUST
11) OPT 3/4" GENSET INTAKE
12) OPT 3/4" SEAFROST INTAKE
A) WATER FILL
B) WASTE
C) FUEL FILL
KEY
⊗ THRUHULL W/ SEACOCK
○ THRUHULL W/OUT SEACOCK
⊖ DECK PLATE
GRP COCKPIT DRAIN TUBES
THRUHULLS
W/OPT. PORT Q-BERTH

Fresh Water System Layout

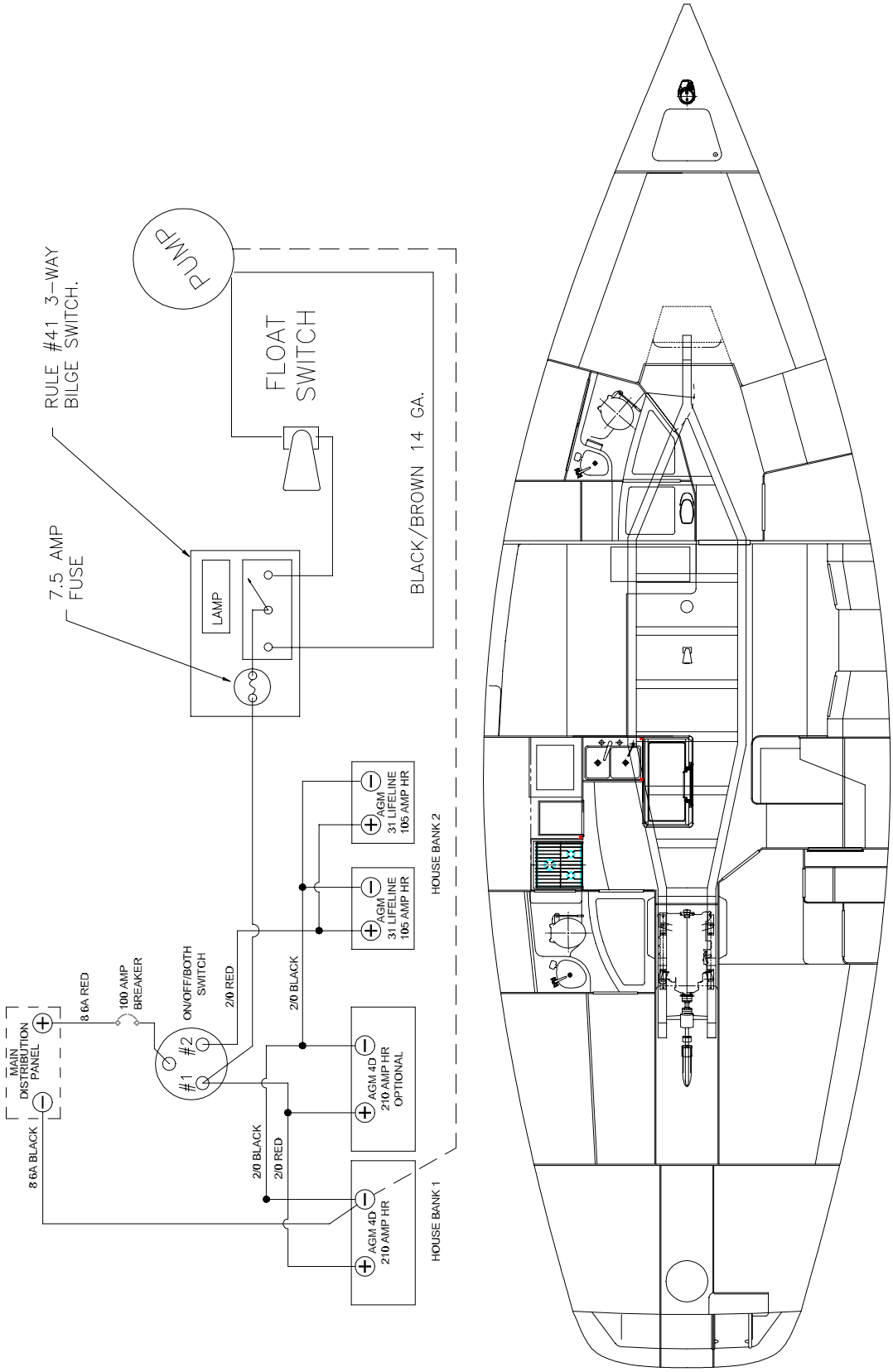


PART	DESCRIPTION		
1)	COCKPIT SHOWER	11)	FOOT PUMP
2)	AFT HEAD FAUCET	12)	(OPT) CITY WATER
3)	FOOT PUMP FAUCET	13)	WATER PUMP
4)	GALLEY FAUCET	14)	ACCUMULATOR
5)	SHOWER	15)	WATER HEATER
6)	FWD HEAD FAUCET	16)	VENT SNORKEL
7)	PORT WATER TANK	17)	TEE (11 REQUIRED)
8)	STBD WATER TANK	18)	3/4" HOSE PVC WHITE & BLUE
9)	Y-VALVE ASSY.	19)	5/8" HOSE PVC WHITE & BLUE
10)	WATER STRAINER	20)	5/8" HOSE PVC WHITE & RED

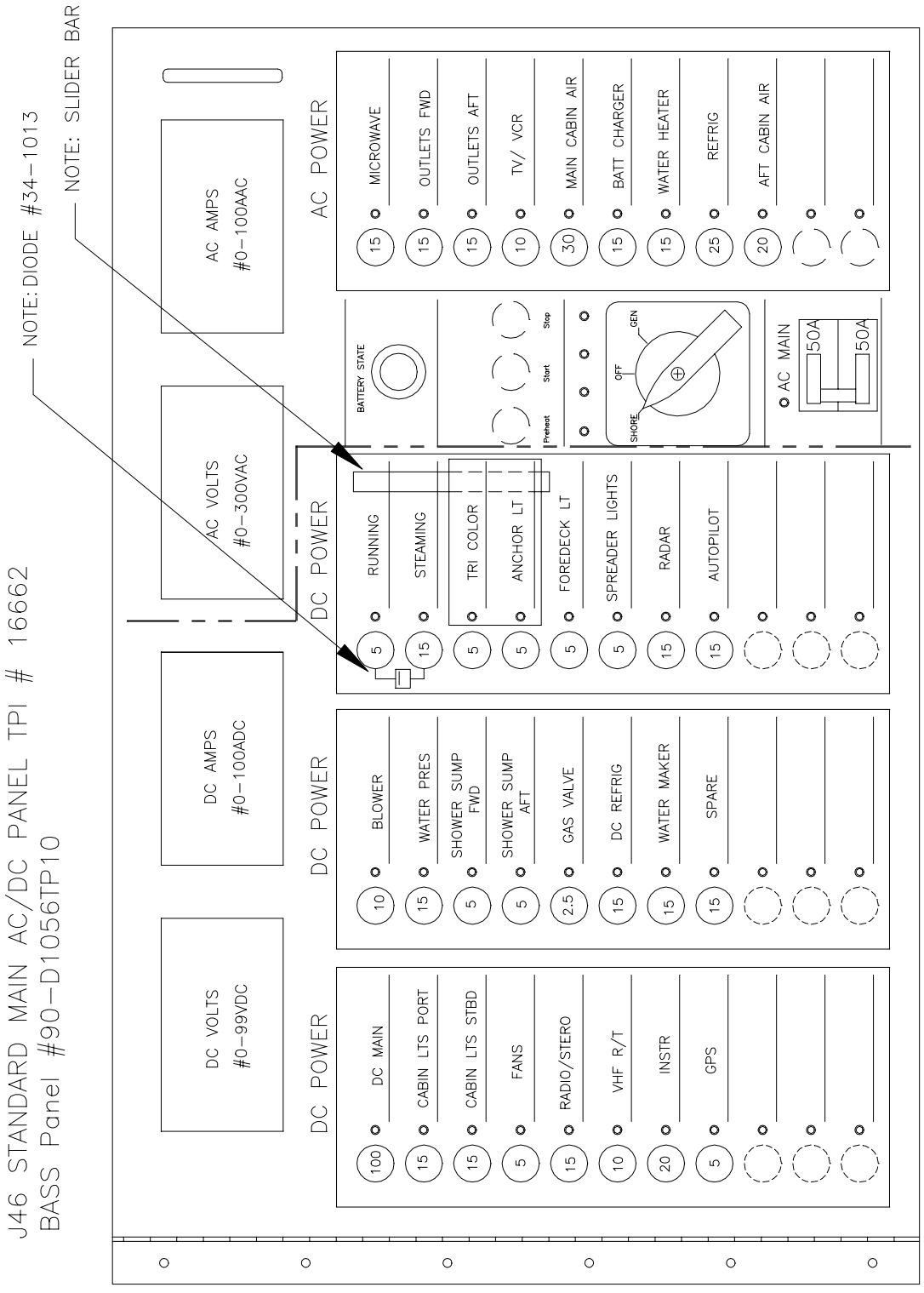
Sump Layout


SHOWER SUMP PUMP UNDER BUNK TOP.
WATER PRESURE PUMP
SHOWER SUMP PUMP UNDER SHELF.
10 AMP FUSE
10 AMP FUSE
SHOWER SUMP
SHOWER SUMP
PUMP
PUMP
PUMP
14 GA.BROWN
14 GA.BROWN
DC CONTROL PANEL
TO NEG BUS
WATERPUMP BREAKER 15AMP
TO POS BUS
FWD SHOWER SUMP BREAKER 5AMP
TO POS BUS
AFT SHOWER SUMP BREAKER 5AMP
TO POS BUS

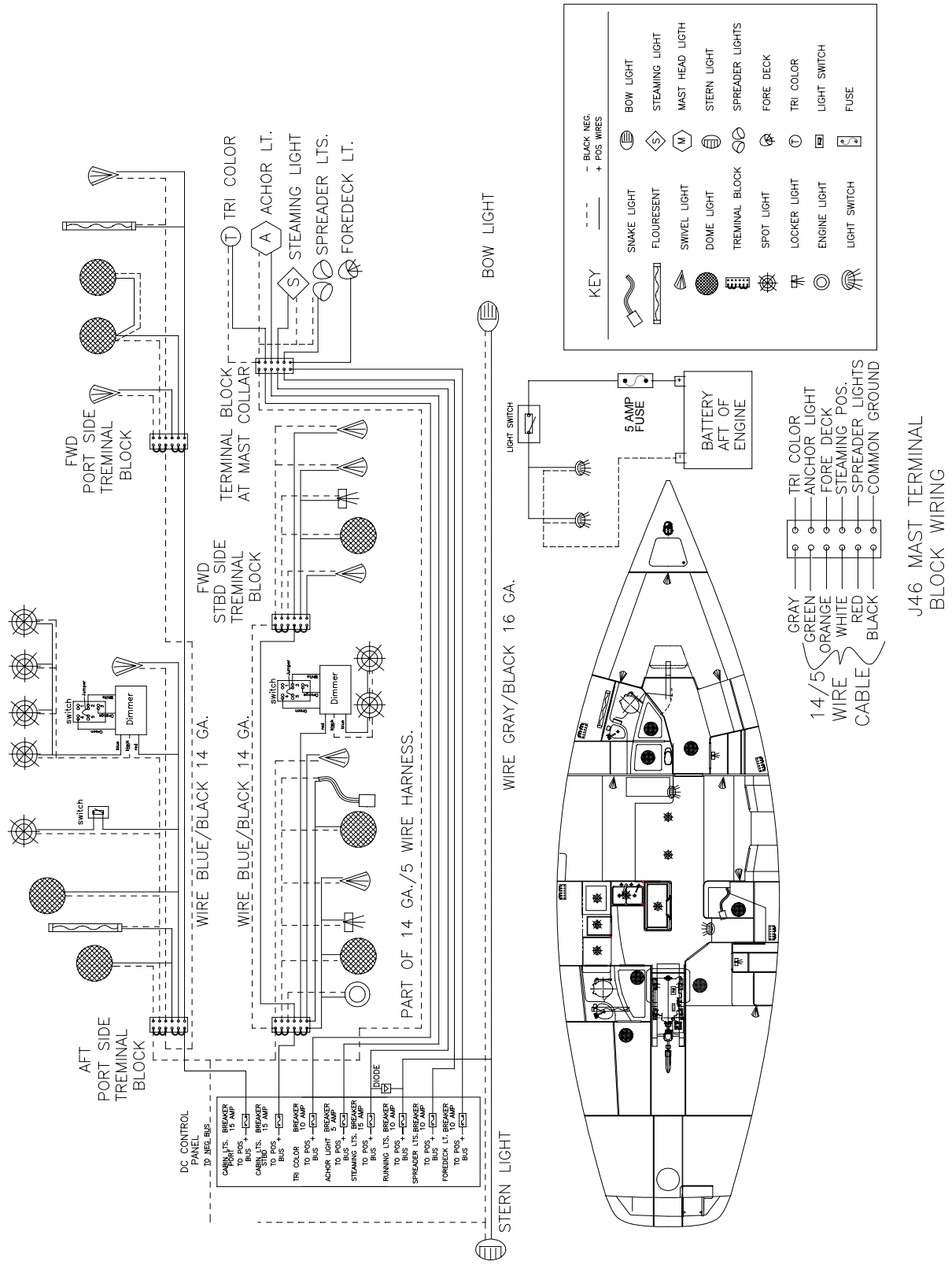
Bilge Pump Layout



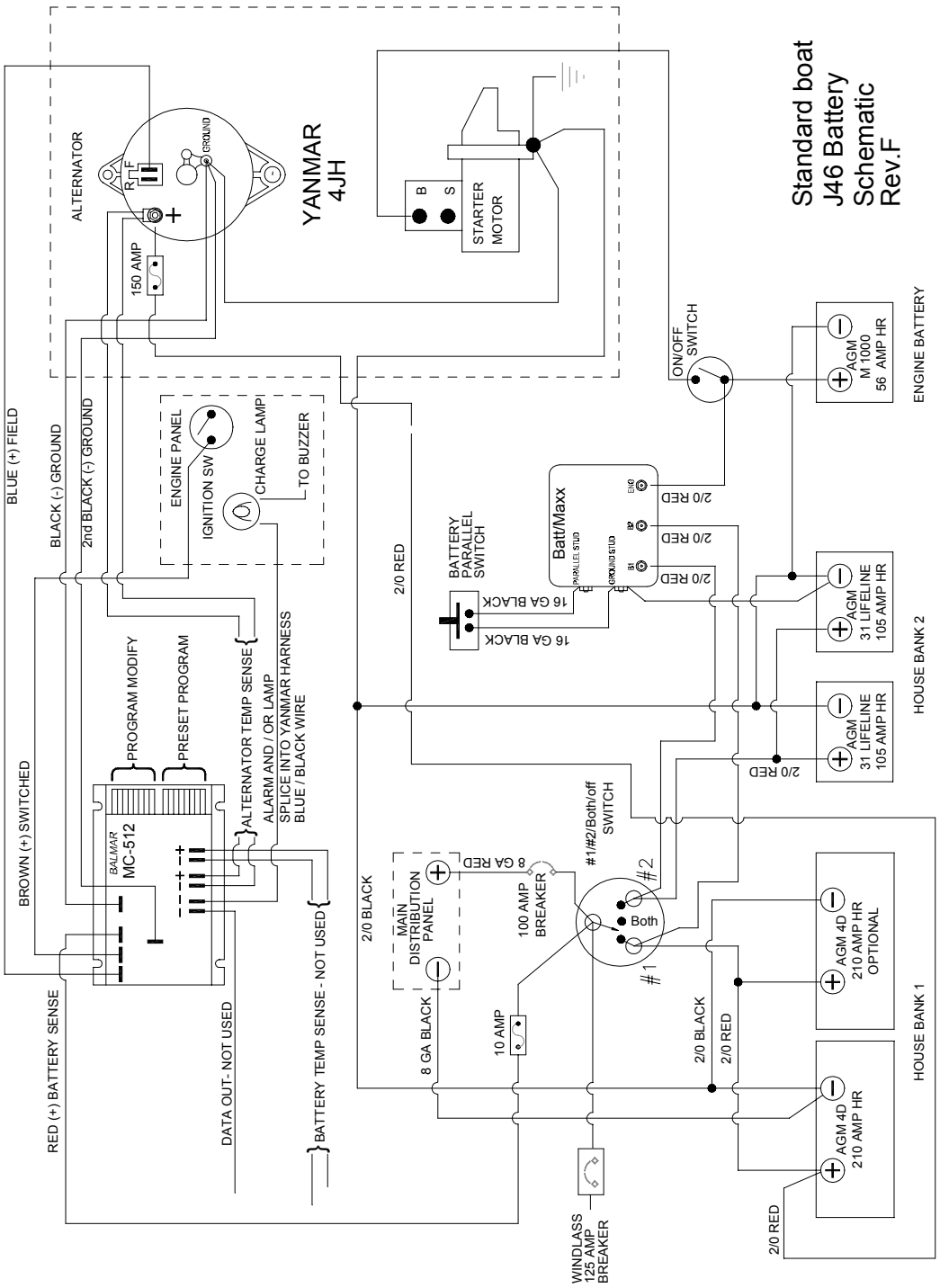
Main AC/DC Distribution Panel



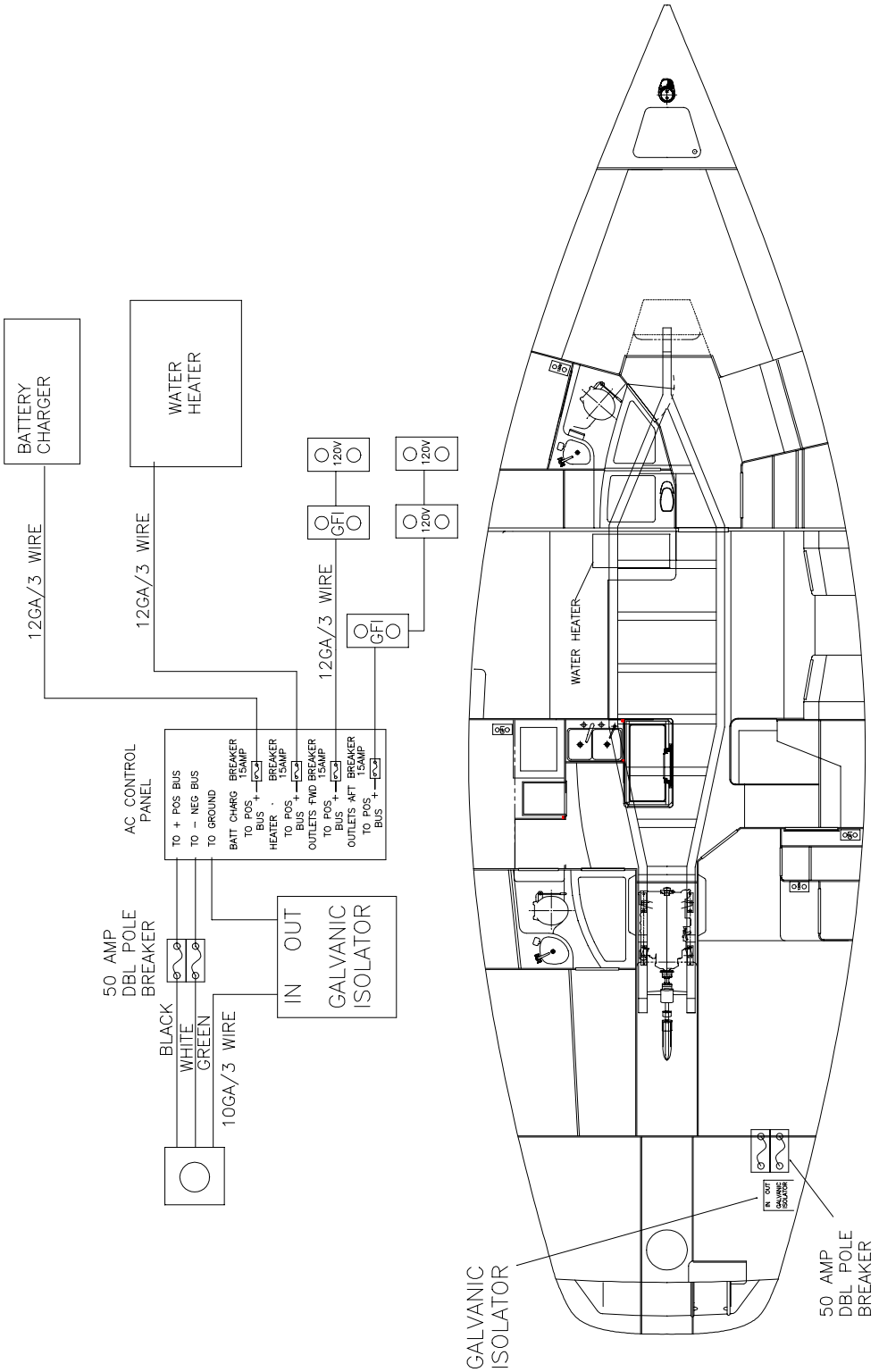
AC/DC Component Layout



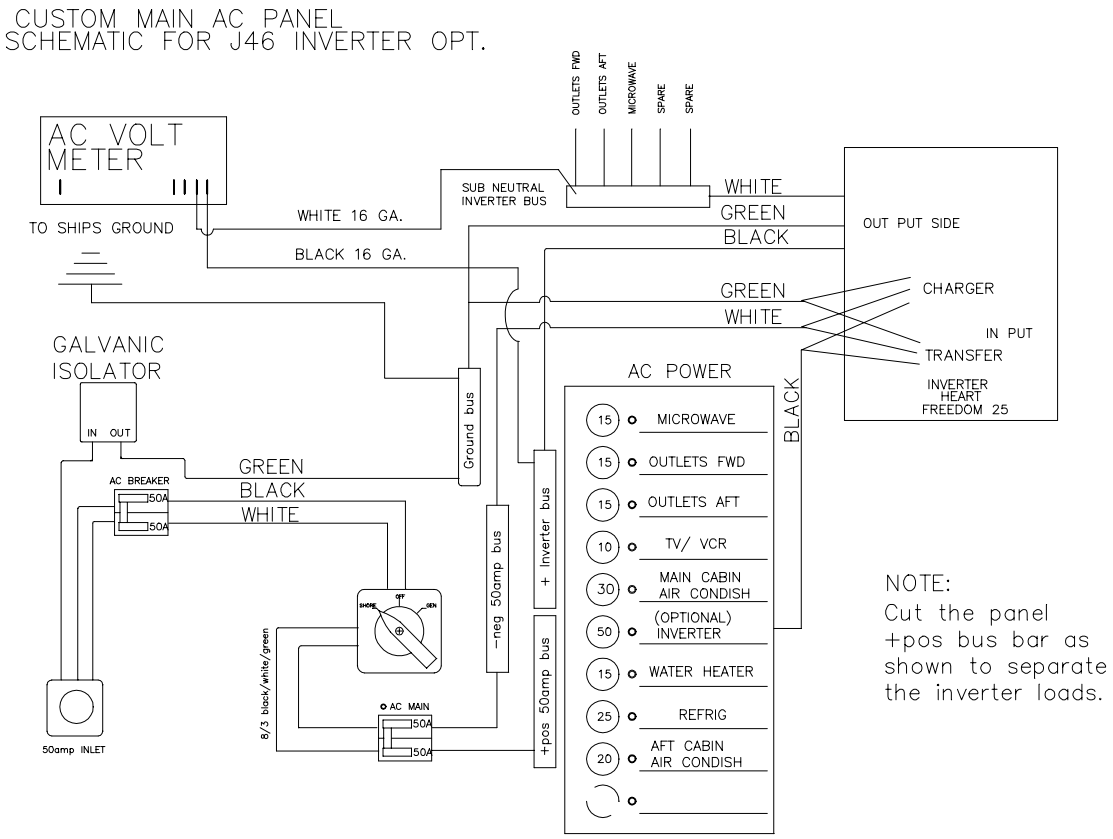
Standard DC Wiring Schematic



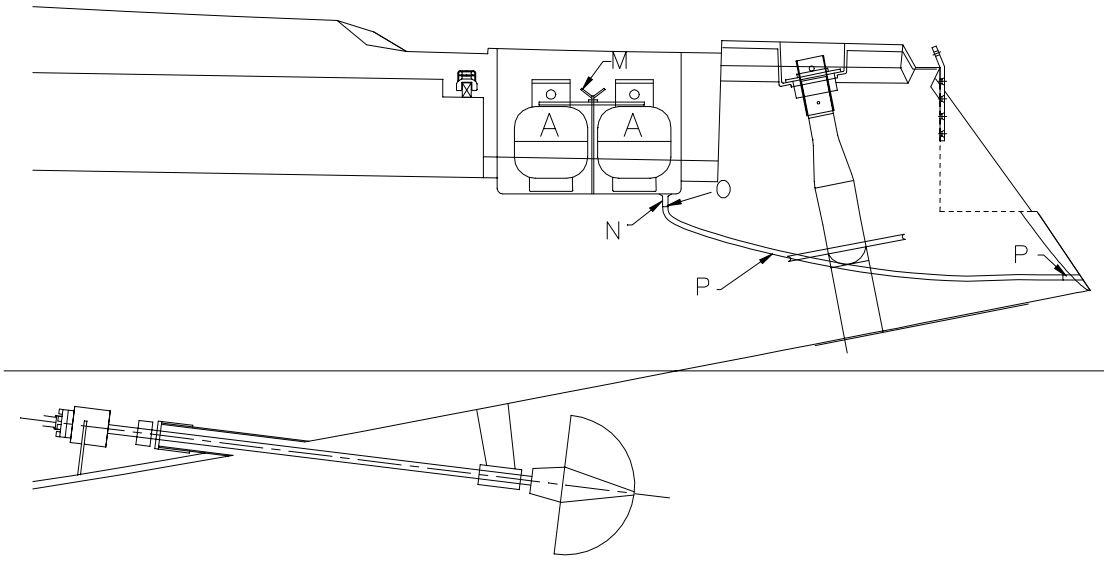
AC Component Layout

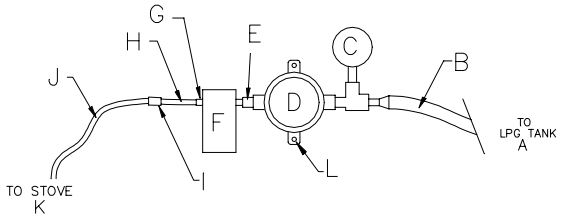


Optional Inverter Wiring



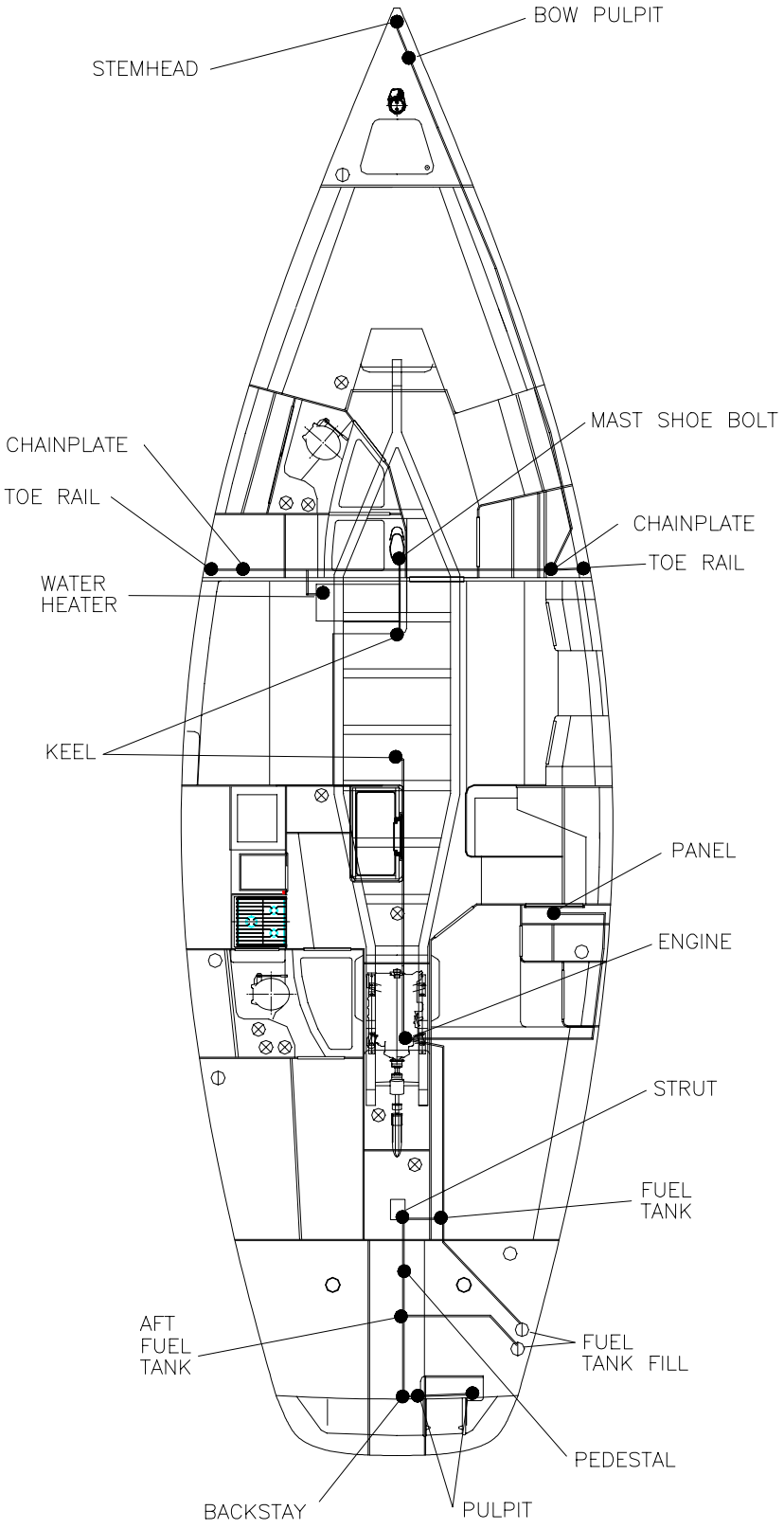
Propane System Layout





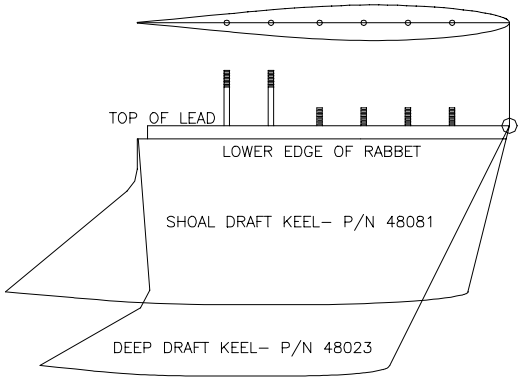
KEY	ITEM DESCRIPTION	TPI #
A	TANK, LPG	17076
B	HOSE, LPG, 36"	17115
C	GUAGE, LPG	92497
D	REGULATOR, LPG	17064
E	ADAPTER, BRASS	23598
F	SOLENOID	15097
G	ADAPTER,3/8" COMP X 1/4"NPT	23344
H	HOSE, LPG, 24.5'	29621
I	ADAPTER, BRASS	23432
J	HOSE, FLEX, LPG, 24"	29617
K	STOVE, 3 BURNER	17840
L	BRACKET, PROPANE	17095
M	BRACKET, TANK HOLD DOWN	10328
N	THRU-HULL, 3/4" NYLON	23047
O	HOSE CLAMP, #12	23033
P	HOSE, 3/4", HARDWALL	29614

Bonding System



Keel Installation Instructions

NOTE: INSTALLATION OF THE KEEL SHOULD BE PERFORMED BY AN EXPERIENCED BOAT YARD. INSTALLATION MAY REQUIRE MODIFICATION TO SUIT AN INDIVIDUAL BOAT YARD'S PRACTICES. DEVIATION FROM THE PROCEDURE DESCRIBED BELOW SHOULD BE REVIEWED WITH TPI CUSTOMER SERVICE. TEL: (401) 247-1050 OR FAX: (401) 247-4115



STEP BY STEP PROCEDURE

1) APPLY A THIN FILM OF GREASE OR MOLD RELEASES WAX TO AFT 2 BOLTS.
2) DRY FIT KEEL TO HULL.
3) LIFT HULL APPROXIMATELY 5" ABOVE KEEL.
4) ROUGH UP TOP OF KEEL SURFACE AND HULL SUMP SURFACE.
5) COVER TOP OF KEEL WITH 3M 5200 SPREAD EVENLY OVER ENTIRE SURFACE.
6) LOWER HULL TO KEEL, 3M 5200 SHOULD SQUEEZE OUT AROUND PERIMETER. (clean up excess)
7) CHECK TO SEE IF KEEL IS SET VERTICALLY BY MEASURING FROM KEEL CENTER LINE TO HULL SHEER BOTH PORT AND STDB. SHOULD MEASURE THE SAME AT THE TRAILING EDGE AND LEADING EDGES OF KEEL AT TOP AND BOTTOM.
8) WHEN KEEL FITS PROPERLY INSTALL THE 4 FWD KEEL WASHERS BED THEM WITH 3M 5200.
9) INSTALL NUTS AND TIGHTEN SNUG.
10) 2 AFT BOLTS FILL GAP BETWEEN TUBE AND BOLT WITH GP RESIN MIXED WITH MEKP HARDENER (NO ADDITIVES) TILL FLUSH WITH INSIDE OF HULL SUMP.
11) LET CURE 2 HOURS.
12) INSTALL AFT 2 WASHERS BED IN 3M-5200.
13) TIGHTEN ALL THE 1 1/4 NUTS TO 450 FT.LBS TORQUE
14) LET CURE 24 HOURS. THEN PAINT INSIDE SUMP AREA WITH AIR DRY GEALCOAT.
15) APPLY 1708 TABBING AROUND RABBET W/ EPOXY RESIN. (APPROX. 2 LAYERS)
16) SAND AND FAIR WITH VE PUTTY OR EQUIVALENT EPOXY FAIRING PUTTY. WARNING: DO NOT REMOVE OR SAND THROUGH FACTORY GRAY EPOXY COAT
17) APPLY BOTTOM PAINT AS INSTRUCTED BUY THE PAINT MANUFACTURER'S RECOMMENDATIONS.

MATERIALS

1 #48023 or #48081 KEEL
6 #48085 WASHERS
2 #29030 3M 5200 TUBE
6 #42060 NUT 1-1/4"
#47037 CLOTH 1708 X 6" WIDE X 32 FT.
#46142 MEKP
#46206 GP RESIN
#46003 H31 CATALYST
#46141 EPOXY RESIN 37-139
#46190 PUTTY VE, CHOP

MIXING INSTRUCTIONS

GP RESIN	EPOXY 2:1 RATIO
GP RESIN 33-234-01 (1 QUART)	EPOXY RESIN 37-139 (1 GAL)
TO MEKP CATALYST (10 cc)	TO EPOXY CATALYST H-31 (2 QUARTS)

Tuning The Rig

Tuning the Mast

Please refer to special manufacturer instructions for the optional Hall carbon fiber mast included at the end of this guide.

- The standard headstay length is designed to allow sufficient rake for good upwind balance with either small or large jib. The Harken MK III Unit 2.0 furler fits the standard –17 rod headstay. The backstay is set-up with a toggle under the hydraulic cylinder to set the handle forward and the release knob aft. The mast step has a small range of adjustment.
- After the mast is in a Spartite kit has been provided in order to support the spar completely at the deck. Please follow the installation instructions from Spartite to install properly. After the Spartite sets, add a large bead of silicone around the mast to eliminate incremental wicking of moisture belowdecks.
- After taking up the upper and lower shrouds hand-taught to center the mast (using the main halyard to equalize distance to the port and starboard rail), apply maximum backstay on the cylinder to bend the mast.
- Tighten the upper shrouds equally to port and starboard with a wrench.
- Release the backstay and tighten the lower shrouds to straighten the mast and establish the correct amount of pre-bend recommended by your sailmaker
- The middle section of the mast is held in place laterally by intermediate shrouds which attach to the mast below the upper spreaders and terminate at the deck. Each are adjusted with turnbuckles. Most people tend to over-tighten these on their first try.
- Double check your tuning handiwork by looking up the backside and front side of the mast to be sure that it is straight from side to side.
- Go sailing in 12-14 knots of wind with 80-90% backstay pressure. Chances are your leeward upper shrouds will look loose. If so, take up on the leeward upper 2-3 turns, then tack and adjust the other upper shroud the same. Continue back and forth until you've eliminated any visible slack in the leeward upper shroud. Release backstay to medium pressure, site up the mast to check side-to-side straightness, and then tighten the leeward lower shrouds as necessary to straighten the side to side. You'll probably find the lowers will only need 1 or 2 turns beyond hand-tight for the right setting. Too much and you'll see the mast bow to windward at the lower spreader.
- Check straightness and repeat the process making minor correcting adjustments to leeward rigging only. Pin and tape the shrouds when finished.

Rigging The Boom

Run the single line 1st clew/tack reef from the clew to the forward end of the boom, up through a sheave on the boom, to an individual turning block attached to a SS hook (this hooks into tack reef grommet in sail). This line then leads down to the turning block at the mast collar, through the organizer and aft to a rope clutch. The 2nd clew reef line leads in a similar fashion but exits the boom down to the mast collar block then aft.

- Attach boom gooseneck to lug on mast with large clevis pin.
- Attach Quik-Vang to mast lug at deck and then boom lug (hoist end of boom with main halyard if necessary).
- Install mainsheet block (Harken 100mm) on bail at end of boom.
- Install mainsheet per rigging diagram.

Engine System

The engine and fuel system is engineered to be conveniently accessible for repairs and general maintenance. Located aft of the companionway ladder. There is access to the front, sides and back of the engine from which all important functions can be reached; including water strainer, fuel injectors, fuel filter, fuel primer, expansion chamber, and alternator.

Before starting the engine read the engine manufacturer's owner's manual for proper break-in and operating procedures. Once the engine is running, inspect it for any discrepancies, like oil leaking, excessive water leaks, or anything out of the ordinary.

- **Engine Control Panel:** is mounted aft of the port side of the helmsman's cockpit. It contains the starter, kill switch, warning lights, and gauges. The combination throttle/gearshift are mounted on the steering pedestal. Double-check all mechanical connections between engine and on-deck equipment.

- **Engine Bed:** is constructed of heavily reinforced fiberglass. This provides a superior mount over wood and is also rot-proof. The engine sits on Yanmar "soft" rubber shock mounts to help isolate the engine vibration from the boat. Check to see that the engine is sitting correctly on them and the bolts tightly secured.

Drive Train

This is the complete system which propels your boat. It includes the following components; coupling, self-aligning thrust bearing, shaft seal, shaft log, shaft, strut, and the propeller.

- **Transmission:** is attached to the aft end of the engine and houses the reduction and reverse gears. These gears generally need little maintenance, but the oil level should be checked periodically.

- **Shaft Seal:** is aft of the engine where the propeller shaft passes through the hull. It is a waterproof no-drip Volvo shaft seal. Please refer directly to the owner manual for this component for more information.

- **Max Prop Feathering Propeller:** is a geared feathering propeller built of high quality bronze alloy. Check to see that the blades on the prop open almost perpendicular to the shaft. There are a few easy precautions which can prolong its life:

    1) Coat it with a silicone grease film.
    2) Check to see that the joints in the folding prop have a good coating of waterproof grease.
    3) Check that the blades are smooth.

- **Propeller Shaft:** is stainless and supported at the inboard end by the shaft coupling and at the outboard end by the bronze cast strut containing a "cutlass bearing." Before launching attach a "shaft zinc" to minimize corrosion. The zinc should be replaced each time the boat is hauled and perhaps more often depending on the amount of active current in your home port.

- **Engine/SHAFT Alignment:** is set by TPI to ensure that the engine, shaft, stuffing box, and prop are properly adjusted to minimize engine vibration. During commissioning, the alignment should be re-aligned, as it is difficult to duplicate actual conditions (in the water with rig tuned) in the factory. If there seems to be excessive vibration, notify your dealer and have them investigate.

Fuel System

- **Fuel Tank & Hoses:** The J/46 is equipped with two fuel tanks for a total 90gallon capacity. The primary 60gallon tank is located under the quarter-berth. A secondary tank is located on centerline aft below the steering cables. This 30gallon tank gravity feeds into the primary tank. Fuel lines run from the primary tank to the fuel primer pump. From there fuel flows into the injectors. The tanks themselves are aluminum and baffled to prevent fuel slosh. The secondary fuel tank is designed to allow conversion to accommodate an optional generator and/or heater. For a layout, please see the Fuel System diagram.

- **Fuel Gauge:** is located under the wheel hub at the pedestal. The *gauge reflects level (height) of fuel in the primary tank, not the quantity*. Try to maintain a minimum level of 1/3 to 1/2 tank filled at all times.

- **Fuel Line Shut-Off Valve:** also sits atop the tank at its forward end. Since diesel engines require bleeding after they have been deprived of fuel, it's important that the shut-off valve be in the "ON" position (lever parallel to piping) anytime the engine is started.

- **Fuel Tank Access Plate:** is atop each fuel tank and provides access inside to clean the tank or check the fuel gauge.

Engine Cooling System

The engine utilizes a closed system in which a mixture of water and anti-freeze is circulated within the engine for cooling. This liquid is cooled by a heat exchanger which uses sea water, in a similar fashion to the radiator on a car which uses air to cool the contained liquid.

- The filler cap for the fresh water (closed) cooling system is located on top of the engine manifold, and looks like a radiator cap. Check the level in the manifold frequently (ensure engine is cool). If additional liquid is necessary, add only a mixture of anti-freeze/fresh water. In colder climates where freezing may occur over the winter, be sure to test the coolant anti-freeze/water mixture for freezing point and add anti-freeze as needed if the system is not drained for winter lay-up. Follow engine manual recommendations for proper water/anti-freeze ratios.

- The WATER STRAINER is located in the engine compartment and has a two-stage design to prevent "clogging" of the cooling system. Its simple design facilitates periodical cleaning. To clean: Ensure the engine water intake thru-hull is closed. Check that the lever is perpendicular to the intake. Unscrew the wing-nuts atop the filter and remove the strainer from inside the glass case. Wash thoroughly with water or replace with a new one if badly soiled. Replace strainer into case and tightly affix lid with the wing-nuts.

Exhaust System

The J/46 is equipped with a water-injected exhaust system which cools the exhaust. It is designed to both dissipate heat and act as the exhaust muffler. If the flow of cooling water is interrupted and the engine overheats severely, the rubber hose coming from the engine exhaust elbow may melt. Always check this hose after an occurrence of overheating. Water can accumulate in the bottom of the muffler. In fall de-commissioning, the pot should be drained using the drain plug, or anti-freeze added to the pot so residual water doesn't freeze. If the engine does not start after a prolonged period of cranking over (starting), be sure to drain the pot or exhaust loop. Water accumulates here and may fill enough to flow back into engine manifold if engine does not start.

General Hints To Avoid Problems

- Monitor brightness of cabin lighting and charge batteries as required by running engine. Batteries are charged by either the AC battery charger or by running the engine.

NEVER START THE ENGINE WITH SHORE POWER CONNECTED

- Stop engine with throttle fuel cut-off, then turn ignition key “off”.

- NEVER turn engine battery switch to OFF position while engine is running.

- For best efficiency and fuel economy a cruising R.P.M. of 2,600 -2,800 works well. Vary RPM levels periodically when cruising under power for a long distance. Be sure to thoroughly read and follow the manufacturer’s manual for proper break-in procedure for the standard turbo charged Yanmar Diesel engine. Remember, that a turbo engine is designed to run at higher RPMs (over 2,000) and not to be used at idle speeds for long periods of time, which will soot up the turbo. When not underway, battery charging and refrigeration cooling should be handled via shorepower or an auxiliary generator.

- Do not run engine at full throttle (3600 RPM) for sustained periods, as breakdown may occur. Most importantly, find an RPM that runs smoothly and follow the Yanmar guide. Avoid "vibrating" RPM speeds when possible.

- Mark the shaft at the coupling where blades are vertically aligned causing least resistance when motor is stopped and in neutral. Turn shaft by hand to “feather” prop then lock by putting gear shift in “REVERSE”.

- Keep engine gear shift lever in "REVERSE" position while sailing to prevent possible "free-wheeling" of shaft.

- CAUTION: The J/46 engine is very quiet, and it is possible to forget that it is running. Before shifting the gear shift lever into REVERSE when sailing, double check that the engine is turned off.

Engine Safety Precautions

Due to high temperatures it is recommended that after running the diesel for more than two hours you reduce speed to idle and allow excess heat to dissipate for five to ten minutes.

The most common cause of trouble is contaminated or dirty fuel. Your boat is equipped with a dual primary fuel filter located in the engine compartment and a secondary filter on the engine. The wise skipper carries replacement filter cartridges. The dual filter is designed so that one filter is in operation while the other is a spare. This way you can switch the fuel flow through the spare filter, if you need to change out the first one.

Familiarize yourself with the bleeding procedure for the engine and try bleeding it yourself. The procedure only takes a few minutes after you are acquainted with it, but can be exasperating to the uninitiated.

Starting The Engine

- If installed, turn VHF, GPS and Instruments "OFF."

- Transmission lever:

  FORWARD= PushForward

NEUTRAL= Between Forward & Aft

REVERSE= Pull Aft

Push in throttle button at center of handle and move throttle lever forward 1/3 to increase initial starting RPM's.

- Turn ignition key to "ON" position. Audible alarm indicates low oil pressure, and will continue until engine starts. There is an oil pressure alarm test switch on the cockpit engine panel.
- Turn the ignition key to the "START" position. Release immediately after start. If it does not start in ten seconds, turn off key. Advance throttle slightly and after ten seconds, repeat.
- Oil pressure light and audible alarm should go out after starting. If not, stop engine.
- Once engine starts, set throttle at about 1,000 RPM. Check for exhaust water. If no water, shut down engine immediately. Check to be sure through hull valve to engine cooling system is open, or if the sea water strainer is clogged. If indications are normal, warm up ten minutes.
- Test forward and reverse at dock with docking lines in place. Shifting should be done below 650 RPM's AT ALL TIMES. Shifting at too high a speed will cause severe damage to the entire drive train.
- Check for exhaust water periodically. Engine is cooled by sea water via a heat exchange and enclosed fresh water system. Water temperature should be 165 degrees or less and water should exit from the stern at all times. Without water exhaust discharge, engine will burn up.
- The best cruising RPM is approximately 2,600-2,800 RPM. Maximum continuous rated RPM is 3400. Check sea water strainer for debris. Ensure thru-hull is open. If necessary, check under hull to see if intake is blocked.
- It is best to keep fuel tank 1/2 full (diesel #2) to avoid debris intake and air locks.

Turning Engine Off

- Place throttle lever in idle position (vertical).
- Let engine cool down.
- Push engine stop button on engine instrument panel until engine stops.
- When audible alarm sounds, turn key off. DO NOT use key to stop engine. Do not stop engine with decompression lever except in extreme emergency. If decompression lever is used to stop engine, fuel will spray out and accumulate on top of pistons, creating danger of explosion the next time engine is started.
- When under sail you may hear propeller "wind milling" underneath. After shut down put engine in reverse gear and it will stop. Because the J/46 engine is so quiet, make double sure the engine is off before switching into reverse gear.

Fueling the Diesel Tanks

When preparing to take on fuel, the following safety precautions should be followed at all times: Properly secure the boat to the dock using bow, stern and spring lines.

- Shut off all equipment: Engine, Battery Switch, Radios, Lights, Etc.
- Remove fuel fill plug and clean threads of both plug and deck plate carefully so no dirt falls into filler opening. Place the fuel hose nozzle into the fill pipe.
- Fill slowly. DO NOT OVERFILL. Marine fuel expands with an increase in temperature. Thus, fill only to 95% capacity. If you cannot see the fuel pump, ask the attendant or a crew member to call out the total gallons. l.
- If fuel tank is overfilled, fuel will leak out the tank vent located on the transom. This spillage should be cleaned up immediately.
- After fueling, replace fill plate and wash up any spillage. Go below deck and check for fumes or leakage. Check bilge. **IF EITHER FUMES OR LIQUID FUEL ARE PRESENT, CORRECT THE SITUATION BEFORE PROCEEDING.** Open all hatches and ports to facilitate ventilation.
- Only after you are totally satisfied that no potentially dangerous condition exists, leave the fuel dock. Be considerate of fellow yachtsmen.
- In the event of a serious spillage, **STOP FUELING IMMEDIATELY**. Replace fill plate, notify attendant so he may warn others and wash down thoroughly all traces of fuel or source of fumes.

Engine Maintenance

Check the engine, batteries, and engine mounts once a month. Ensure the engine is fastened securely to the engine mount frames and look for any problems, such as fuel or oil spillage. If you need help, consult a professional marine mechanic or a Yanmar licensed repair mechanic.

Run the engine frequently and at occasional high speeds, even if it is not in gear. One reason why sailboat engines may burn out within a few years is that they are run infrequently and lubricating oil is not thoroughly and evenly distributed on all moving parts. Be sure to check oil and coolant levels often. If you have any doubts about the purity of the fuel you are buying, use a strainer to filter out water and dirt.

If there is excessive vibration, in other than specific RPM points, loosen the coupling and insert a feeler gauge all the way around to determine if the engine is properly aligned. If aligned and vibration persists, check prop for proper balance and uniform opening/closing and be sure that strut mounting is secure. If there is still a problem, contact your nearest Yanmar Service Representative.

Plumbing Systems

General

The plumbing systems in your J/46 consist of fresh water, manual and electrical pumps, and the heads (toilets). This section will describe their locations and how they operate.

Fresh Water System

Water Tanks: are made of rotationally molded polyethylene. Connected to them are the following hoses: a) fill hose- is located on the tank top and connects to the deck water fill pipe; b) feed hose- located along the tank bottom connects to the water system at the water selection Y valve; c) air vent hose is internal and leads under the sheer line into the bow compartment.

Water Fills: are located on deck. Be sure the water cap threads are cleansed of dirt for a better seal. The water may develop a "taste" after a long period of time. Instead of flushing it out you can add a commercial water preservation agent, such as Sudbury Aqua Fresh crystals, to greatly improve the taste.

Water Tank Selection Y-Valve: is located on centerline below the cabin sole just forward of the galley sink island. After the tank is changed, open a water faucet to allow air to escape. When the water trickles out, close the faucet momentarily to allow the pump to build up pressure (check that it's turned on!); then open the faucet until a steady stream flows. It may be necessary to repeat the process several times to bleed all the air from the system.

Water Pressure Pump: is located outboard and under the forward portion of the port settee berth in the main cabin. The pump operates off the DC electrical system and pressurizes the entire water system. Should any problems arise, read its manual. If the system is not pressurizing, first check that the pump is working correctly, i.e. it's pumping water. Secondly, check that all hoses are securely connected to their fittings. Thirdly, ensure all air pockets are eliminated as outlined above. If there is still a problem, consult your dealer.

Water Heater: is located under the "L" of the main cabin salon settee to port. Water is heated by either the engine or shore power. If the water heater is on shore power, be sure a continuous supply of water is available to it, otherwise the electrical element within it will burn out. Due to this potential risk, water heater elements are excluded from warranty. Thus, be certain the water pressure pump is always on while hooked up to shore power.

Thru-Hulls

All thru-hull fittings are of glass reinforced nylon or bronze. For safety reasons, we recommend that you tape a soft wooden plug adjacent to all thru-hull fittings in the event of a hose or valve failure. These fittings each have valve-handles. To reduce confusion, remember the **long end of the handle indicates the direction of flow.**

Pump Systems

Pumps are easy to maintain and just as easily forgotten...they always happen to seize up when you need them most. Consequently, take care to keep their screens clean and rubber gaskets/bellows working correctly. Before taking a long trip, order replacement parts for all pumps.

- **Sink Drains** empty directly overboard through a thru-hull fitting beneath each sink.
- **Shower Sump Pumps** are locally operated in each head and drain directly overboard.
- **Icebox Drain** valve is located under the bilge board and should be closed to keep in the cold air except when draining.

- **Bilge Pumps** are both electrical and manual. Two pump intakes are located in the keel stub under the main cabin floor, with a third intake attached to a coiled hose in the aft head. This is long enough to reach the bilge and qualifies under ORC cat 2.
  - The **Manual** pumps are operated from the cockpit and from the aft head.
  - **Electrical Bilge Pump** is wired to an independent switch on a recessed panel adjacent to the nav station.

Head System

The J/46 is equipped with two certified marine heads which are capable of discharging effluents into a holding tank or overboard. Both systems are easy to operate and with correct usage and proper maintenance, will provide many years of use.

Before operating the **HEAD**, ensure you have read its manual thoroughly and understand the proper procedures. Silly mistakes can cause severe "head" aches at the worst possible time! And a word to the wise

PLEASE TRAIN YOUR GUESTS ON HEAD OPERATION. NEVER, NEVER ASSUME THEY KNOW HOW TO USE IT!!

The head is a large pump which takes in seawater and flushes waste into the holding tank or overboard. The salt-water intake thru-hull is underneath the head sink and the discharge is in the port aft locker. Remember open/closed positions on these thru-hulls. It is good seamanship to close the intake and discharge seacock for the head when not in use.

When seawater and effluent are pumped through the head, they're pumped into the holding tank by the action of pumping the toilet handle. The waste discharge fitting on deck is provided so a shoreside pump-out station (i.e. vacuum cleaner) can empty the tank. Care should be taken not to overfill the holding tank as effluent can block the vent hose and may damage the tank... or worse, burst the hose. If the toilet is difficult to pump, check to see if the holding tank is overfilled. "When in doubt, pump it out!"

The holding tank must be pumped out before winter storage. Dumping a quart of anti-freeze through the heads will prevent the seals and equipment from cracking. For your information, the following hoses are connected to the tank.

- Waste Discharge Hose from the head
- Pump-out Hose leading to the deck fitting
- Vent Hose to vent the tank overboard.

Electrical System

The following section describes the electrical systems aboard the boat, how they operate, where they lead, and how to avoid trouble. Please read this section over more than once. For wiring code information please refer to the color code diagram.

DC Electrical System

A 12 Volt DC electrical system is used throughout the J/46 for lighting and operation of pumps and various accessories. The J/46 is standard with one 210 Amp battery, two 105 Amp batteries, and one 56 Amp 1,100 CCA engine battery. An optional 210 amp AGM is available and replaces the lower nav station drawer.

- **Electrical Panel:** is built by Bass® and controls electric distribution with circuit breakers and switches. The main wiring harness runs from the back of this panel.
- **Mast Wiring Terminal Box:** is located in the shower compartment on the bulkhead. A wiring harness exits the mast near the box, and is wired directly into the D.C. system through a terminal strip. Once this wiring is installed, test each function to insure proper operation.
- **Battery Switch:** The battery switches (one for each house bank) are located under the navigation table. They operate in either an ON or OFF position. The dedicated engine battery switch is located in the aft cabin with a similar switch.
- There is a waterproof **Momentary Parallel Switch** located in the cockpit at the engine panel. The purpose of this switch is to allow you to start the engine using the house bank should the dedicated engine battery fail.
- The **Alternator** is attached to the engine and creates a charging current only when the engine is running. The output is to an automatic battery system located in the aft hanging locker which distributes the current to the batteries as deemed necessary.
- **Accessories:** such as navigation instruments, stereos, radars, GPS can be added to the electrical panel and the 12 VDC system. Extreme care and forethought is necessary for installation as these are sensitive instruments and require some measure of protection. Such work should be performed by a marine electrician. Be sure all sensitive accessories are not only grounded properly but that "fast blow" fuses are run off the panel for extra insurance against damage to their components.

110 VAC Shorepower System

The 110 volt AC shore power system is functional only when the boat is plugged into suitable power from shore. The cord provided as part of the option has the standard end for 50 amperage service. Depending on the wiring in the facility, various adapters may be required to plug into the shore end. The boat end of the cord plugs into the inlet on the starboard cockpit coaming. Ensure the plug prongs match those on the inlet, insert and twist to lock it. Then screw down the outer ring to seal the cord from water and to prevent it from pulling out. The AC panel for shore power is located in the nav station as part of the primary panel. Due to the length of the wire run from the inlet to the electrical panel, there is a circuit breaker located aft of starboard cabin bulkhead. This switch needs to be on in order for shore power to reach the panel.

- **AC Selector Switch:** is located on the main electrical panel. This switch has settings for SHIP service (inverter or generator) or, SHORE service (dockside). To activate AC power, use this switch to select the source.
- **AC Side of the Panel:** indicates line voltage being received from the shore circuit with an indicator light. The line voltage will vary with the number of appliances operating on the same circuit. In large marinas there may be a large number of boats on the same circuit, causing fluctuations
- **AC Normal/AC Reverse Polarity Light**: The AC side of the panel has a red light to show when the polarity is reversed. Care should be taken not to operate 110 AC systems on board with reversed polarity. Double-check shore connections. If problems still persist, then notify dock master to repair the shore plug. NOTE- Even though the switches are in the appropriate position, the shore power system in no way assures personal safety using electrical apparatus.
- **Water Heater:** switch supplies power to the water heater 110 AC element for hot water while dockside. Note the precautions regarding the use of electrical power to heat water are contained in the plumbing section of this manual.
- **Outlets:** located throughout the cabin supply power for 110 AC accessories. The entire system has "ground fault" protection.
- **Ground Fault Systems:** There are two separate ground fault systems: 1) One in the nav station to protect the outlets to starboard. 2) One in the galley protecting outlets to port.

Galley Stove LPG System

Liquid Propane Gas (LPG) is the most common fuel used for boating and is available at most marinas in the U.S. The Force 10 stove is of very high quality and is engineered for the marine environment in high-grade stainless steel. It is comparable to a home range.

The biggest difference is safety. While the home gas stove utilizes a petroleum gas which is lighter than air (it disperses easily if there is a leak), the propane stove utilizes a gas which is heavier than air, and thus, sinks to the bottom of enclosed compartments. All J/Boats equipped with LPG stoves utilize a safety system prescribed by ABYC and USCG guidelines. This includes an independently vented and sealed compartment for the tank, an electronic solenoid shut-off valve, a regulator, and approved LPG hose.

- **Propane Tanks:** are located in a specially designed compartment to starboard of the wheel in the cockpit, which ventilates over the side to specifically eliminate the accumulation of dangerous gases.
- **LPG Gauge:** sits atop the tank to measure the amount of pressure left in the tank.
- **Solenoid Cap Valve:** is located on the hose in the aft propane compartment. It electronically shuts-off the flow of gas at the tank. This valve is a “normally closed” valve; therefore electrical power must be provided so gas can flow to the stove.
- **Regulator:** is located on the hose in the aft propane compartment. It is a screw down valve which regulates the flow of propane into the system.

Stove Operation

- Check that all burner (including oven) knobs are off.
- Check manual valve on tank and open.
- Ensure battery switch is on and 12 volt power available.
- Turn on solenoid valve switch on electrical panel.
- Open burner valve on stove slightly and light burner. Always apply flame or sparker to burner before opening valve.

When Cooking Is Complete

- Turn off solenoid valve switch on electrical panel first to shut-off supply of gas at the tank.
- After flame of burner goes out, turn off knob for burner (this purges gas from lines).
- Firmly close manual valve on tank—DO THIS EVERY TIME!!

Safety

Lightning Protection

The J/46 is completely grounded in accordance with industry practice. The mast, shroud chainplates, stemhead fitting, backstay fitting, stanchion bases, engine, and electrical system are grounded to the keel. In spite of this grounding, there can be no assurance that personnel or the boat will not suffer injury if the boat is hit by lightning. The following are suggestions only and in no way guarantee safety in the event of a lightning strike.

- If possible, remain inside a closed boat during a lightning storm. Do not contact any metallic objects inside or outside the boat.
- Avoid contact with any items connected to the lightning conductive system (mast, shrouds, etc) and especially in a manner to act as a bridge between them (mast to shroud, etc).
- Avoid swimming during a lightning storm.
- If the boat is mildly struck by lightning, check all compasses and electrical gear to determine that no damage or change in calibration has taken place.
- Check all thru-hull fittings, keel bolts, prop shaft strut thru-bolts for leakage (water).

Safety Equipment

You can never be prepared enough for emergencies which may arise at sea. During the commissioning of your J/46, triple check that you have all required safety gear and adequate spares aboard. Make it a policy to thoroughly brief any first time crew members with emergency procedures including man-over-board, fire, and sinking. Please contact your local U.S. Coast Guard office for up to date USCG safety requirements.

IT IS THE OWNER'S RESPONSIBILITY TO COMPLY WITH ALL FEDERAL AND STATE REGULATIONS WITH RESPECT TO SAFETY EQUIPMENT; OPERATION OF THEIR VESSEL; AND SAFETY OF ALL PASSENGERS

Maintenance Tips

Even though modern construction has helped reduce upkeep, regular attention should be given to the maintenance of your boat. This includes the fiberglass exterior surfaces, the interior wood surfaces, and the mechanical and electrical systems.

A well maintained boat will not only bring you years of enjoyment, but most importantly, will bring you greater personal pride and joy.

Fiberglass/Gelcoat

Apply a marine wax at least twice annually to preserve the "factory fresh" appearance for many years. Be sure fiberglass surfaces are clean and free of salt before waxing. Abrasive cleansers should never be used for general cleaning as they can severely mar the shiny gelcoat finish. On areas difficult to wax, like nonskid, a coating such as "Armor All" will restore its original luster.

Bottom Paint

Keeping your bottom clean is of paramount importance as it not only keeps off bottom growth, but maintains passage-making speed. Even though you have applied anti-fouling paint, take a swim once a month or so (or hire a diver) and scrub the bottom and propeller with a scrub brush or abrasive sponge pad.

Zincs

The shaft zinc should be inspected for electrolysis. If it is severely pitted, replace it. Remember, it is a sacrificial anode to protect the propeller and shaft from electrolysis. It can deteriorate quickly, so inspect it frequently.

Deck Hardware/Running Rigging

Wash deck hardware frequently with fresh water to remove accumulated salt and grime. Wash down the jib sheets, spinnaker sheets, and other lines in fresh water. Check for chafe and turn sheets end-for-end once a year to more equally distribute wear.

Check the blocks and also wash them with fresh water. Most ball-bearing blocks need only hot water to cleanse them, then spray with a dry Teflon lubricant. On conventional sheave/pin blocks, wash off, disassemble, clean, rub a light waterproof lubricant on the center pin, then reassemble.

Furthermore, check and lubricate the sheaves and blocks on the mast. Also, ensure the turnbuckles are clean and well lubricated. Without proper care they can "freeze up" and not turn.

In general, it is handy to keep a spray can of a light lubricant, such as TRIFLON, in your tool kit for frequent squirts of blocks, shackles, mainsheet travelers, and other moving fittings.

Winches

Read the manufacturer's manuals on winch repair and maintenance. Winches are fine pieces of machinery which take little effort to maintain. However, all too frequently, they suffer neglect because no one can see how much they wear down or get dirty.

Clean And Lubricate Them! It takes little time to disassemble and put back together. Note that the gears and bearings are lubricated with special winch grease and pawls. Pawl springs need only a light oil. Keep spare pawls and springs in a kit for replacement.

Deck Hatches

Hatches need lubrication of their hinges with a silicone grease once a year. Also check the seals to see they are not unduly cracked, or are losing their ability to seal correctly. To increase traction on the plastic hatch covers, apply a non-skid tape fore and aft.

Cabin Ports

The ports are made of acrylic and are highly impact resistant. However, avoid highly abrasive cleansers which can scratch them. Instead, use mild soap and water to clean ports. Avoid chemical solvents, notably acetone, which can "melt" the ports...i.e. smear their smooth finish.

Stainless/Chrome

Hardware like the steering wheel and pedestal, stanchions, bow/stern pulpits, and winches can be treated with Never-dull® or other light abrasive cleansers, even toothpaste works well. After applying cleanser, polish to a gleam with a clean cotton rag.

Steering System

Check the system regularly. Examine and lubricate the sheaves and make sure the stuffing box around the rudder post is not leaking. Periodically flush bearings with fresh **hot** water to eliminate leftover residue from marine life or saltwater. A small dose of "dry" silicone lubricant is helpful to maintain the "lubricity" of the bearing. Thoroughly rinse the upper and lower rudder bearings with fresh water when

Fiberglass/Gelcoat/Formica

Interior gelcoat surfaces should be cleaned periodically with non-abrasive cleansers and smooth areas should be waxed. Formica should be cleaned with non-abrasive cleaners.

Wood

Most surfaces have been varnished prior to delivery or during commissioning. TPI sprays 2 sealer coats and at least 4 top coats of satin varnish to the cabin sole before the boat is completed. When making plans to varnish, remember these few pointers:

- Allow adequate time for the varnish job. This could be anywhere from 1-4 weeks.
- Do not plan on other interior work during this time. Allow uninterrupted access to the boat by those doing the job.
- Assist by locating the boat in as "dust-free" a spot as possible. This usually means outside, and away from parking lots, working shipyards, and other dirt or dust producing areas.

Bilges

Bilges are painted with air dry gelcoat to prevent water permeation and accumulation of mildew. They should be washed regularly with strong solvents to keep them smelling clean and to prevent the fouling of bilge pumps.

Annual Maintenance Checklist

Running Rigging

___ Check running rigging lines for wear at splice, turning blocks, etc.

___ Inspect blocks and shackles for wear . Clean and lubricate or replace as necessary.

___ Service winches, check for free spinning operation(bearings) and ratchet stop action(pawls).

___ Re-caulk chainplates.

Deck Hardware

___ Check lifeline integrity, stanchion, and rail attachment to deck.

___ Check all cleats for signs of fatigue. Tighten fasteners or replace as required.

Steering System

___ Consult Edson maintenance guide.

___ Check rudder for impact damage or cracks.

___ Check rudder post play in bearing tube.

Thru Hull And Seacocks

___ Check seacock integrity, operation, and watertightness. Replace, reassemble, and lubricate as required.

___ Check hose attachment and clamps.

Electrical

___ Disconnect power source when making repairs or adjustments to electrical systems.

___ Check battery charge, terminal connections.

___ Check electrical panel, breakers, and switch condition and operation; tightness of wire connections.

___ Check running light operation.

___ Check ground wire attachment to keel, mast step, thru hulls, and engine.

___ Check seal of electrical solenoid valve and ensure it closes when switched to “OFF” position.

Mechanical Systems

___ Check stove fuel system, hoses, clamps, and shut-offs.

Engine & Drive Train System

___ Read engine owner’s manual maintenance guide.

___ Check engine fluid levels and systems for leaks- shut-off controls.

___ Check throttle action- start and stop controls, cable clamps, and locknut.

___ Check shifter cable clamps and locknuts.

___ Check exhaust system soundness, hose clamps.

___ Check coolant system, hose clamps, intake, and filters.

___ Check transmission shift lever action, control cables, clamps and locknut; fluid level and alignment.

___ Check alignment of shaft, coupling, and prop attachment-key, nuts, and cotter pin.

___ Check shaft log tube integrity, drip less shaft seal and clamps.

___ Check strut bolt attachment, cutlass bearing, and shaft bolts.

___ Check all engine wire connections.

Fuel System

___ Check fuel tanks and gauges, hoses, clamps.

___ Check fuel fill hoses and connections.

___ Check fuel filters.

Keel

___ Check keel bolt nuts for tightness. Do not arbitrarily tighten bolts unless you’ve experienced a severe grounding. If there is concern for leakage, consult your dealer or professional yard.

Plumbing

___ Check bilge pump function, electrical wiring, hose clamps, and strainer. Clean, disassemble, lubricate as required.

___ Check head and holding tank hoses, clamps, connections, and valves.

Water System

___ Check water tank hoses, clamps, valves, connections.

___ Check water heater hoses, clamps, electrical wiring.

___ Check water filters.

Storage Tips

Many of the maintenance problems surrounding boats can be pinpointed during the end-of-season haul-out. This is the time when a careful inspection will reveal the ravages of a long summer. If you live in colder climates, it is also the time to prepare the boat for what might be an even more brutal winter ashore.

First, clean your boat as thoroughly as possible. Get the yard to use a high-powered hose to clean off most of the growth before it dries onto the bottom paint. You may have to use a scrub brush and putty knife for heavy growth, like barnacles, and for areas around the propeller and shaft and underneath the keel.

Rigging

Sails and lines should be removed at the end of each season, rinsed thoroughly in fresh water and stored in a warm, dry place. This will prolong their useful life as mildew can affect even today's synthetic materials. Most larger sail lofts offer a cleaning/storage service.

Engine

Check the engine owner's manual for maintenance guidance during the season and for the specific haul out procedures necessary to winterize the engine. Fill fuel tank to minimize condensation and add an anti-bacterial agent. In the exhaust system, water can accumulate in the bottom of the water lift "pot." The pot should be drained using the drain plug, or anti-freeze added to the pot so residual water doesn't freeze.

Batteries

It is preferable to remove the batteries and store in a heated area, recharging periodically to maintain full charge status. If you are in warmer climates, it is possible to leave the batteries aboard. Simply check them once a month to ensure they remain charged.

Head

Read the owner's manual for specific maintenance procedures. Generally, you will want to drain all water and replace with an anti-freeze agent. To maintain the lubrication of its internal seals, flush through a light oil. Again, follow the manufacturer's recommendations for winter maintenance.

Water System

Drain all tanks and ensure it is also drained from between the heater and the check valve installed in the supply line. Add an anti-freeze solution specifically designed for marine potable water systems to the residual water in the water tanks, and pump with boat manual and pressure pumps until all lines are full of anti-freeze solution.

DO NOT use automotive radiator-type anti-freeze, as most are poisonous and may damage the plumbing.

Bilges

Pump bilges completely dry and use a strong cleaning solvent to eliminate odors and bacteria.

Electronics

Remove as many as possible to avoid condensation caused by the extreme rise and fall of temperature and humidity that come with winter.

Interior & Ventilation

Clean the cabin thoroughly with a damp rag, for any salt left behind will breed mildew. Clean out the head and sinks. Any paper items- books, toilet paper, notepads- should be taken off so they don't mildew and rot.

Leave the dorade vents in place and open so the boat can circulate fresh air. If a winter cover is used, it is good to leave the hatches cracked open to enhance air circulation. This helps prevent mildew. Also, remove boat cushions and store indoors.

Exterior

If storing outdoors, a winter cover is recommended. It can be a simple piece of canvas forming a tent over the entire boat or heat-shrunk plastic. In either case, a tent-like support structure is necessary to prevent pools of water and to assure proper air circulation.

Ensure the entire deck is covered to prevent uneven discoloration of the gelcoat.

Cradle

It is critical the boat is adequately supported. The keel must rest solidly on the main beam and the vertical risers merely stabilize the boat. If it appears the boat is supported too much by the vertical risers, correct the problem as it could structurally damage the hull.

Mast Storage

Store masts on well padded supports and do not place any weights on them. Avoid tape on the mast surface as it leaves a difficult to remove residue. Wash all surfaces, sheaves, standing rigging with fresh water. If possible, remove all standing rigging, halyards and mast instruments and store indoors. For painted masts, it is usually NOT advisable to wrap the mast in plastic, as moisture can become trapped, and lead to premature paint blistering.